EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Ralph Waldo Emerson said that nothing great is ever accomplished without enthusiasm. Maximum efficiency in the use of fuel on American railroads would be a great achievement; it cannot be accomplished without enthusiasm on the part of all who are concerned in this problem. It is one of the chief functions of the organization devoted to fuel conservation to enlist *the co-operation of every department in an enthusiastic effort to save fuel.* There are many ways in which this may be accomplished; the formation of fuel committees on each division in which all departments are represented is one of the best.

The Sixth Fuel Commandment: Co-operation

In the Equipment and Supplies column of the *Railway Age* of July 9 an inquiry was reported as having been issued by the Colonial Department of the Netherlands Government for 82 locomotives for the Java State Railways. This order has since been placed with the Krupp Works in Germany, which is understood to have been able to underbid our own manufacturers because of the low value of the mark as compared with the dollar. The Krupp Works may find difficulty in filling the order because of shortage of materials. Nevertheless, the taking of this large order is an indication that the Germans are making big efforts to get back on their feet again in export trade in railway supplies.

German Competition in Locomotives

Although the last two weeks have shown indications of a decrease in car loadings in some localities, pointing to a lessening of the pressure on the roads for transportation service in the near future, this should not cause any relaxation in effort on the part of operating officers. Rather, it should provide an incentive for them to get on top of this problem as the opportunity offers. The demands for service have been so far in excess of the capacity of the roads and relief in the way of increased facilities will come so slowly that the necessity for the utmost effort will continue for a long time, and the goal of an average of 30 miles per car per day for the railways of the country, set by the Association of Railway Executives some time ago, is as important to attain as ever. For this reason we again call the attention of students of the present transportation problem to the contest on Means of Increasing the Average Miles Per Car, Per Day, which is now drawing to a close. We solicit the co-operation of transportation officers for this contest, with the knowledge that a thorough discussion of those methods and practices which have expedited the movement of cars in one locality will be of similar assistance elsewhere. To stimulate interest in the contest, prizes of $50 and $35 will be awarded for the best papers received, while we will pay our regular space rates for others accepted and published. The prizes will be awarded on the basis of the readiness with which the ideas presented may be placed in effect, the extent of the improvements they will secure, and their general practicability. All papers must be mailed to the editor of *Railway Age,* Transportation building, Chicago, on or before September 30, 1920.

Contest on Increasing Car Mileage

In placing orders for additional shop machinery and equipment, railroad officers should not forget the imperative need for new forging, annealing and heat treating furnaces; also the pyrometers, temperature control apparatus and other equipment necessary for their efficient operation. Fuel oil has increased greatly in cost in the past twelve months and is becoming more and more difficult to obtain. Competent authorities estimate that the average fuel oil furnace without proper equipment for mixing air and oil, or a pyrometer to indicate temperatures, wastes at least 33 per cent of the heat of the oil. This loss is caused by too little or too much air for complete combustion and unnecessary radiation losses. In addition, much work is spoiled through overheating which could be prevented by the use of a pyrometer. Altogether, aside from the question of fuel economy, high speed steel is too expensive to be spoiled or heat treated in such way as to secure any but the best results. Antiquated equipment, together with guesswork methods of judging temperatures and treating the steel must be done away with, because they result in inefficient or spoiled work, the cost of which in a month may often equal the entire cost of the right kind of equipment. A specific case will serve to illustrate the point. The only furnace giving temperatures of 2,400 deg. F. in an eastern railroad shop was too small for the easy removal of a high speed steel reamer, worth about $200, which was being heat treated. The reamer was brought up to the required temperature, but before it could be removed from the furnace and quenched it was overheated and became a total loss. The experiment would have been as costly had the reamer been underheated, due to the absence of a pyrometer, and failed in service. Fuel economy and correct heat treatment of steel cannot be secured without proper equipment.

Forging and Heat Treating Equipment Needed

A very appreciable part of the entire time of the accounting office force is spent in rectifying clerical errors. This is not necessarily any reflection on auditing office methods; the opportunities for making an error, say in the freight department, are legion. From the time the waybill is made out and the rate, weight and route are entered on it until the amount of money involved is entered as part of the total freight revenue for the month in the general books, there are so many opportunities for a slight mistake to be made that it would take a chapter all to itself to merely enumerate them. A mistake once made, however, often involves more time than the original transaction itself involved, with, of course, the possibility of a further mistake. If it were possible that all errors could be eliminated in both revenue and disbursement audit-

The Prevention of Mistakes

ing offices, it is fairly safe to say that much more than 10 per cent of audit office expenses could be saved. There are two particular methods by which the possibilities of errors can be reduced—one is more careful training of employees, the other the provision of better tools with which to work. There are not only mechanical devices which greatly reduce the possibility of human error, but there are also other elements which have a bearing on the human tendency to make mistakes. Modern office equipment is an important factor. It is sometimes rather difficult to convince an executive who has never had any personal experience in the accounting department that expenditures for light, spacious offices, well-designed office furniture, steel cabinet files, etc., shows any return on the investment. It is a fact, however, and one that has been proved conclusively. Roads, such as the Southern Railway and the New York Central, which have made special studies along these lines—and there are probably many other roads—have demonstrated actual savings beyond reasonable question.

Courage on the Freight Train

The conductor who stops his train because he merely *thinks* that something is wrong, and, after stopping finds that he has only caused a seemingly unnecessary delay, must cultivate quick wit at all times. It is childish to manufacture excuses afterwards. And for the engineman who has to manage imperfect air brakes on steep descending grades this admonition is perhaps even more important. Commenting on this feature of train running, as touched upon in our issue of July 23 (page 131) a correspondent asks us to put in a friendly word for the man whose boss is super-critical concerning any and all delays; for the inexperienced conductor who may risk his train because he fears to risk his job. We must admit that always to aim at safety-first requires courage. Everybody is familiar with the cowardly engineman's plea that on a given occasion he had run faster than his own judgment dictated, or had taken some other risk, because of his cold-hearted superior, who would wink at risky practices but would not forgive the runner who came in 15 minutes late. It is needful not only to know your job but to know the right words to be used in justifying any act. To leave it to the boss-griever to make the defense at a protracted investigation a week later, is an unbusinesslike makeshift. Possibly the reader may object to our use of the word "cowardly"; but do we not all admire the man who follows the safe and courageous course, even if he has to spend an hour—or a day—in sustaining his position? Be careful, however, not to tell your superior "where he is to get off." If he is in any degree wrong he should find it out, not by your arguments, but, rather, be your skilful marshalling of facts.

Improvement in Transportation Conditions

The improvement in transportation conditions which has been made within recent months is indicated by the fact that in the week ending September 10 the accumulations of loaded freight cars awaiting movement at various points amounted to only 50,737. A few months ago the accumulations of cars were abnormally large. They are now just about normal. About half of the cars included in the reports of accumulations are being held at the ports loaded with freight for export or coastwise movement. Car loading continues to show increases over the corresponding weeks of 1919 and 1918. The total number of cars loaded during the week ending September 4 was 947,743, as compared with 904,393 in 1919 and 872,560 in 1918. The low figure for 1918 is doubtless attributable to the fact that Labor Day was included in the week. Up to September 11 the total amount of bituminous coal which had been moved this year was 369,143,000 net tons. This is about 15,000,000 tons less than in the corresponding period of 1917 and 42,333,000 tons less than in the corresponding period of 1918, but 50,750,000 tons more than in 1919. The United States Geological Survey, in giving these figures, adds the following significant statements: "In this connection it should be remembered that production during 1918 exceeded consumption and provided for a net addition to consumers' stocks by the end of the year of approximately 30,000,000 tons. In 1919 the condition was reversed. Consumption exceeded production and there was a net draft on stocks of perhaps 40,000,000 tons for the year." The railways have practically remedied the shortage of coal in New England and are maintaining the schedule of movement to the Northwest which, some weeks ago, it was decided was necessary in order to prevent a coal famine in that section next Winter. Perhaps the greatest difficulty being met by the railways now is that of providing sufficient cars to move the grain from the Western States. While the transportation situation as a whole cannot be regarded as satisfactory, it may safely be said that it is nearer satisfactory than it has been at any time since last March.

How Are the Supervisors Supervised

No railway track can be maintained without expenditures commensurate with the burden of traffic imposed on it, but having met this condition within reasonable limits the chief requirement for proper results in maintenance of way is adequate supervision properly applied. This requisite is, of course, common to all departments but unfortunately a peculiar attitude has grown up on some roads as regards the conduct of maintenance work which tends to interfere with the effectiveness of the supervision. On many roads in this country, supervision of maintenance of way rests with the roadmaster and the master carpenter, who report to a division superintendent who in most cases is himself an operating rather than a maintenance of way man. If this superintendent is a true executive and if his supervisory lieutenants are thoroughly competent, he will exercise his control over their work through his ability to judge of their capacity for the work to which they are assigned and also by directing the general distribution of the moneys appropriated for maintenance of way work. In other words, the superintendent will supervise by judging the results rather than the methods. But unfortunately for reasons that may or may not be sufficient some superintendents feel called upon to direct the work in its minutiæ and as a consequence the supervisors are required to carry out detailed instructions rather than to exercise their own initiative or apply their own technical knowledge. Railway operating officers are more inclined to take this attitude toward the work of the maintenance of way department than that of the motive power department because the details of the former are essentially less involved than those concerned with the locomotive. Nevertheless, maintenance work embodies a technology that can be mastered only through intimate contact over a period of years and any attempt to exercise minute supervision over this work by one not thoroughly familiar with its details will tend to reduce its efficiency. Therefore, if the work of the roadmaster or master carpenter requires a degree of supervision that goes much further than the distribution of appropriations and materials or a consideration of the results he secures, it is important that such detailed supervision be exercised by one who is essentially a maintenance of way officer, namely, a general roadmaster, a division engineer or an engineer maintenance of way.

Car Building in First Seven Months of 1920

STATISTICS regarding the number of freight and passenger cars delivered to the railways of the United States by the car building companies during the first seven months of 1920, and the numbers on order but undelivered at the end of this period, reflect strikingly the effects of the principal influences to which the railways were subjected during this time. These influences were the delays in determining the future of the railways and the "outlaw" strikes.

Almost a year ago the *Railway Age* began to give warning that unless the railways were returned to private operation by January 1, 1920, under legislation assuring them the opportunity to earn reasonable returns, it would be impossible to make plans and raise capital in time substantially to increase their facilities in the year 1920. The Transportation Act was not passed until late in February and the roads were not returned to their owners until March 1. The appointment of the Railroad Labor Board was delayed and it did not make its wage award until July 20. The Interstate Commerce Commission had proceeded with commendable celerity, but could not profitably pass on advance in rates until the wage award had been made, and therefore the rate advance case was not decided until July 29. The advances in rates did not become effective until late in August and, in consequence, no railway management knows as yet how much net operating income it will be able to earn on the new rates. Meantime, the "outlaw" railroad strikes had slowed down production in all lines of business, including that of car building.

The effect of these influences upon the building of freight cars is indicated in the accompanying table, showing the number of freight and passenger cars delivered by twenty-three car building companies up to the end of July, including all but two or three having a substantial output.*

TABLE I—CARS DELIVERED

	Freight cars		Passenger cars	
	Dom.	For.	Dom.	For.
January	4,482	1,904	1	9
February	3,774	1,039	4	..
March	2,796	1,994	11	28
April	2,127	1,912	15	..
May	2,630	1,387	..	..
June	2,608	708	..	21
July	2,583	380	18	27
	21,000	9,324	49	85

The figures given are rather striking, to say the least. They show that these companies built during the first seven months of the present year a total of only 21,000 cars for domestic service, or an average of 3,000 a month. This output is very small, and it indicates that 1920 is likely to furnish a new low record for car production. It is worth noting that the total production of cars of all car building companies and of railroad shops in the United States for domestic service in 1919 was 67,063. And yet domestic freight car production in 1919 was the lowest ever recorded in the annual statistical compilations of the *Railway Age* with one exception, namely, 1915, when 52,226 cars were built.

Similar comparisons when applied to passenger cars are even more striking. The total output of passenger cars for domestic service in the first seven months of 1920 was 49. Deliveries in the best month, July, totaled only 18, while in the two months, May and June, no passenger cars were delivered at all. The lowest production ever recorded in the *Railway Age* statistics was for 1919, when 300 passenger cars were built for domestic service. In 1918, 1,480 passenger cars were built for domestic service.

TABLE II—CARS ON ORDER AND UNDELIVERED

(Figures for end of month)

	Freight cars			Passenger cars		
	Dom.	For.	Total	Dom.	For.	Total
December, 1919	24,816	10,720	35,536	407	110	517
January, 1920	27,282	9,381	36,663	311	103	414
February, 1920	29,706	8,389	38,095	282	103	385
March, 1920	33,061	7,854	41,455	522	80	602
April, 1920	42,869	7,180	50,049	586	88	674
May, 1920	47,761	6,338	54,099	732	110	842
June, 1920	48,171	7,792	55,963	796	97	893
July, 1920	50,275	8,212	58,487	811	88	899

Table II gives the numbers of "Cars on Order and Undelivered" at the end of each month. It will be seen that when the year opened the car builders had orders from American railways for 24,816 freight cars and 407 passenger cars. The number on order and undelivered increased steadily until at the end of July it amounted to 50,275 freight cars and 811 passenger cars. The increase in the numbers "On Order" was obviously due to the fact that the builders were constantly receiving orders faster than they were turning cars out. Undoubtedly it is significant that in April, when the effects of the "outlaw" railway strikes were felt most by all industries, the output of freight cars declined to the lowest figure reached, although the unfilled orders showed a marked increase.

The number of freight cars built this year up to July 31 and the number on order on that date combined amounted to 71,275. Therefore, if all on order at that time were built before the end of the year the total number built in the year would fall far short of the 100,000 which past experience indicates should be built each year to take the place of those which are so badly worn out that they should be scrapped. The number of passenger cars built up to the end of July and the number on order at that time amounted to 860. If all those on order at the end of July should be built before the end of the year the number of new passenger cars provided would be substantially less than in any previous year except in 1919.

The cost of new cars is now much greater than a few years ago. The difficulty of getting them has been intensified by labor and material conditions. The capacity of railway repair shops has been reduced since before the war by the establishment of the eight-hour working day and the abolition of piece work. These and other conditions have prompted the railways to turn over to the plants of the car building companies an increased number of their old freight cars for repair.

The increase in the number of cars car builders have been repairing probably to some extent explains the comparatively small number of new cars they have turned out. Since May there have been compiled, in addition to the production figures, statistics covering freight car repairs in the shops of the twenty-three car building companies. As shown in Table III, these are now running at about 2,500 cars a month. On May 31 there were on order with these com-

* The figures are supplied through the courtesy of the Railway Car Manufacturers' Association, the membership of which is as follows:

American Car & Foundry Company, New York, N. Y.
Bethlehem Shipbuilding Corporation, Ltd., Wilmington, Del.
Bettendorf Company, Bettendorf, Iowa.
Osgood Bradley Car Company, Worcester, Mass.
J. G. Brill Company, Philadelphia, Pa.
Cambria Steel Company, Philadelphia, Pa.
Cincinnati Car Company, Winton Place, Ohio.
Greenville Steel Car Company, Greenville, Pa.
Haskell & Barker Car Company, Chicago, Ill.
Keith Car & Manufacturing Company, Sagamore, Mass.
Keith Railway Equipment Company, Chicago, Ill.
Laconia Car Company, Laconia, N. H.
Liberty Car & Equipment Company, Chicago Heights, Ill.
Magor Car Corporation, New York, N. Y.
McGuire-Cummings Manufacturing Company, Chicago, Ill.
Mt. Vernon Car Manufacturing Company, Mt. Vernon, Ill.
Pacific Car & Foundry Company, Seattle, Wash.
Pressed Steel Car Company, New York, N. Y.
Pullman Company, Chicago, Ill.
Ralston Steel Car Company, Columbus, Ohio.
Ryan Car Company, Chicago, Ill.
St. Louis Car Company, St. Louis, Mo.
Standard Steel Car Company, Pittsburgh, Pa.
Youngstown Steel Car Company, Youngstown, Ohio.

These manufacturers, not members of the association, co-operate in its reports:

Chicago Steel Car Company, Harvey, Ill.
Pennsylvania Tank Car Company, New York, N. Y.

panies 20,130 cars awaiting repairs. On July 31 this had only risen to 23,541, so it is apparent that the builders were keeping up with orders for repairs better than they are with orders for new equipment.

TABLE III—FREIGHT CAR REPAIRS

	Delivered during month	Delivered Jan. 1 to end of month	On order and undelivered at end of month
May	2,296	10,442	20,130
June	2,541	12,983	24,092
July	2,491	15,474	23,541

The situation reflected by the foregoing figures, and especially by those regarding the orders for and production of new freight and passenger cars, is highly unsatisfactory. The need for a large increase in rolling stock, as well as other railway facilities, was never so pressing as now and yet seldom were the railways ordering and receiving as few cars as now. Doubtless, with labor and material conditions improving, the car building companies, if given opportunity, could within the near future largely increase their production. Whether they will be given the opportunity will depend on whether the railways increase their orders. Every railway management is now anxiously awaiting statistics of earnings and expenses which will show the financial effect produced upon its own railroad by the recent advance in wages and in rates.

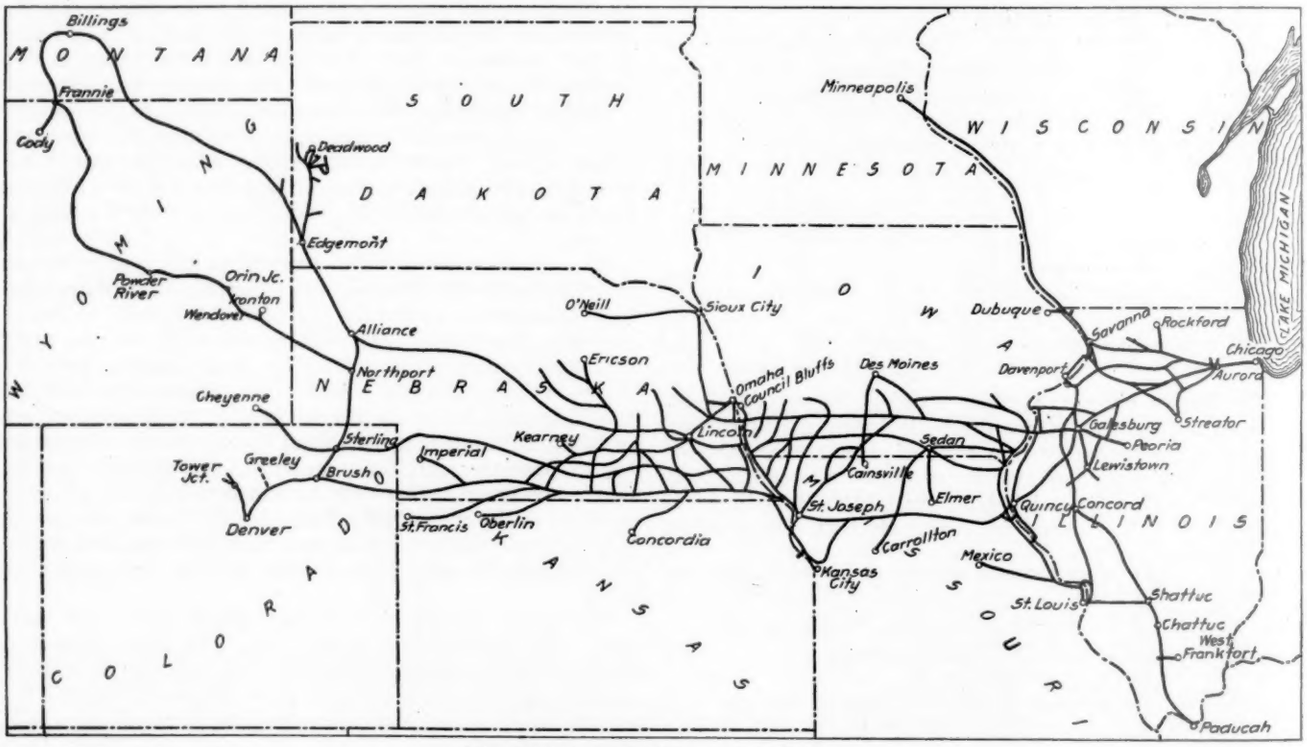
The time when waiting must cease, and decisions must be made regarding programs of expansion, is almost here, however. The railroads appeared before the Interstate Commerce Commission and asked for certain advances in rates, chiefly upon the ground that they were needed to provide net earnings which would enable the companies to improve and increase their facilities. The Interstate Commerce Commission gave most of them practically all they asked. Many of the state railroad commissions are refusing to co-operate by granting corresponding advances in state rates, but there is reason for hoping that in time the railways will be given most of the advances in state rates for which they have asked. The public will soon demand that the railway companies shall begin increasing their facilities on a large scale, and while financial and other difficulties will be great, the public will insist that in view of what has been done to help the railway companies their managements shall put forth the utmost efforts to overcome these difficulties. No data could show more conclusively than those given above that at present almost no progress is being made in increasing facilities.

Chicago, Burlington & Quincy

IN A CLOSE STUDY of the losing fight which the railroads as a whole were waging against economic conditions and oppressive laws in the past 10 years, one is apt to lose sight of the splendid constructive and profitable achievements which were characteristic of American roads—with, of course, exceptions—prior to 1906. New money invested in the railroads since that time has on the whole been unproductive. Grade reductions, the acquisition of heavier locomotives and larger capacity cars, great advances in nearly all branches of the science of railroading have failed to offset restrictive regulation and changing industrial conditions. The Pennsylvania Railroad might spend $40,000,000 to add a two-track 0.2 per cent line from Harrisburg to Philadelphia, the Erie might rebuild and double-track its entire line from New York to Chicago and thus handle double the traffic with the same expenditure of train miles and yet have a hard struggle to make revenue meet expenses. Making new capital expenditures earn a profit on the investment, on most roads, appeared to be nearly impossible.

In the contemplation of this generally gloomy picture, now possibly relegated to the past by the passage of the Transportation Act, and the changed attitude of the Interstate Commerce Commission, one is apt to lose sight of the fact that there were some exceptions. There were some roads which were still operating under the law of increasing returns, that were still carrying on the best traditions of American railroading in the profitable development of new country, and thereby earning a profit on the new capital invested in their own extension and betterment. Such a road is the Chicago, Burlington & Quincy.

In the nine years, 1910-1918 inclusive, the Chicago, Bur-



The Chicago, Burlington & Quincy

lington & Quincy invested in additions and betterments to road $64,629,000; in additions and betterments to equipment, $39,169,000, and in extensions (new road), $15,600,000—a total of roughly, $119,000,000. The year 1910 is selected because it was the first one in which the Burlington in its annual reports to stockholders adopted the classification of expenses and additions and betterments prescribed by the Interstate Commerce Commission and because it was in general a prosperous year for the railroads. In 1910, the Burlington's operating income, that is the amount that it had available from the operation of the railroad property to pay interest on its debt and profits to its stockholders, was $21,724,000. In 1919, under government operation, the property earned an operating income of $27,712,000—an increase over 1910 of about $6,000,000, or a little more than 5 per cent on the additional investment of $119,000,000.

The year 1919 was not a favorable year, as is shown by the fact that the standard return of the Burlington, based on the average operating income of the three years, 1915, 1916 and 1917, was $33,361,000. The very remarkable feature, however, of the Burlington case is the fact that, notwithstanding the wage increases that took place under government operation, the natural increases in costs of labor and material, the suppression of competition in which the traffic relations, the strategic position, etc., of the Burlington, placed it at a great advantage—notwithstanding all these facts, the Burlington continued to earn the same return on its property investment made prior to 1910 that it did in 1910 and earned 5 per cent on the $119,000,000 additional investment since 1910. The funded debt of the Burlington in 1910 was $196,797,000 and it is now $168,050,000. Interest charges in 1910 were $8,506,000; they are now $6,670,000.

Just how much the increased rates will mean to this property, is beyond the scope of these comments. It should be pointed out, however, that besides the increased rates there is the factor of competition. The Burlington is in good physical shape and has an organization which should permit it to at least get its full share of all competitive business—possibly quite a bit more than its full share.

In 1919, under federal operation, total revenues amounted to $154,011,000, comparing with $144,173,000 in 1918. Operating expenses amounted to $120,493,000 in 1919, and of $112,068,000 in 1918. After taking into account other income and after the payment of rentals and interest charges, there was $26,882,000 net in 1919, and $27,358,000 in 1918. The season that the 1918 net was the larger, was because in that year the government took into its non-operating income $4,239,000* miscellaneous income as against $1,257,000 miscellaneous income in 1919. Included in miscellaneous income are lapover items from the period prior to January 1, 1918.

There was a falling off in freight tonnage carried, but this was more than made up for by the increased revenue per ton per mile and the increase in passenger business and rate received per passenger per mile. The total tonnage of revenue freight carried in 1919 was 40,235,000 tons, and the average length of haul was 297 miles. In 1918, revenue freight tonnage totaled 47,264,000 tons and the average haul was 300 miles. The average revenue per ton per mile was 8.95 mills in 1919, as against 7.38 mills in 1918. The number of passengers carried in 1919 was 22,995,000 as against 20,517,000 in 1918. The revenue per passenger per mile was 2.624 cents in 1919, and in 1918, 2.451 cents. Much of the decrease in tonnage in 1919 is accounted for by the fact that only 11,326,000 tons of bituminous coal were carried in that year as against 17,056,000 tons in 1918. Or, to state it differently, in 1919 but 28 per cent of the total tonnage carried was bituminous coal, whereas in 1918, 36 per cent of the total tonnage was coal. This change in character of traffic was reflected in a decrease in the average trainload from 669 tons, the average in 1918, to 621 tons in 1919.

The Burlington fared well as to upkeep under government operation. Many roads suffered severely from inability to get new rail. The Burlington, however, laid 256 miles of new 100 lb. and 90 lb. rail in 1918 and 266 miles in 1919. This is possibly not quite as much rail renewal as would have been done had the company been itself operating the property, but it is not bad for a western road with comparatively little mountain mileage and with a large proportion of its main line tangent. Of the total mileage owned by the Burlington, 4,488 is main line and 4,531 miles is branch and spurs.

The more one studies the Chicago, Burlington & Quincy situation, the more one is impressed with the fact that the road still is going through a process of profitable development. Possibly nothing can bring this fact out any better than to quote, even at some length, from the annual report which Hale Holden, president, makes to his stockholders:

"About 6,000 inquiries for land were received and about 20,000 booklets distributed giving information about lands. Three new books about Colorado, Wyoming and Nebraska were published by the Railroad Administration.

"One thousand four hundred and fifty-one cars of immigrants' effects were received on the McCook Alliance, Sheridan and Casper division, and a total of 4,800 families located. 2,270,000 acres of land were homesteaded in Wyoming. This should bring 2,500 new families into Wyoming. About 16,000 acres of government irrigated farms were taken on the Shoshone and Ft. Laramie projects, which means 228 new families. There was an extraordinary demand for these lands, 3,300 soldiers applying for only 80 farms on the Ft. Laramie unit. This business is largely the result of previous advertising. The demand for farms advanced land values from 50 to 100 per cent throughout the entire territory.

"Last year was the dryest year Wyoming has ever experienced. The agricultural department was asked to locate pasture and feed for hundreds of sheep and cattle men who were in need of assistance. Fifteen special feed bulletins were issued. Feed and pasture was found for 35,000 head of cattle. Fifty-two carloads of cotton seed cake were bought in Texas at an average saving of $1.00 per ton for stockmen and farmers. Forty-five cars of hay and straw were bought through this department.

"Assistance was given in the purchase of 181 head of high grade dairy cows shipped to western points. Burlington seed bulletins have brought about the transfer of 150,000 pounds of seeds for spring planting.

"A potato exhibit car was operated on lines west in March. About 4,000 farmers were put in touch with improved methods and 2,700 pounds of pure certified seed distributed in small lots to farmers. Two carloads of seed potatoes were purchased as a result. A potato bulletin was published and 5,000 copies distributed. A special campaign to interest dry land farmers in producing seed potatoes for Texas growers has been started. 6,000 bulletins and posters on silos were distributed and several meetings held. The department has record of 290 silos built; 64 elevators, mills and feed warehouses were built last year."

The following table shows the principal figures for operation under the government in 1919 and 1918:

	1919	1918
Mileage operated	9,372	9,375
Freight revenue	$107,019,788	$104,492,837
Passenger revenue	35,345,285	28,052,905
Total operating revenues	154,011,438	144,172,769
Maintenance of way and structures	21,487,643	19,996,386
Maintenance of equipment	32,422,401	29,726,987
Traffic expenses	1,064,457	1,209,796
Transportation expenses	60,170,510	56,825,203
General expenses	4,183,847	3,502,856
Total operating expenses	120,777,801	112,173,978
Taxes	8,115,392	7,990,957
Operating income	25,086,664	23,991,477

*There were offsetting miscellaneous income charges in 1918 of $2,317,000, but the difference between income and income charges still leaves a very considerable favorable (to the government) balance for 1918, as compared with 1919.

Letters to the Editor

Trainmen's Rest-Hours Away from Home

BOSTON, MASS.

TO THE EDITOR:

I see by your issue of January 16, page 264, that the Honorable Hoke Smith, United States senator from the State of Georgia, desires to have the Interstate Commerce Commission investigate trainmen's life at terminals away from home; meaning, I suppose, to find out what kind of lodgings and meals the men get, how much they have to pay for them, what kind of society they enjoy, and, in general, to show up in a public way just how much or how little these men improve themselves while they are loafing at a place where they have no legitimate amusement. Perhaps instead of the word "improve" I should consider the question, not of bettering conditions, but of keeping them up to par. Ordinarily the young man who is idle and does not know what to do with himself is fortunate if he keeps from running down, to say nothing of making any advance in his character.

The Honorable Hoke has a good idea. He need not be ashamed of it. His constituent who put him up to the job may not have the best of motives, but there is no question about the need of making life pleasanter for men who have to stay from eight to fifteen hours in some dreary place where they have no profitable acquaintances. The Young Men's Christian Association cannot do everything. Many men of a much higher mental order than the average brakeman have a problem to keep themselves out of mischief when away from home under unfavorable conditions.

But in a problem involving so many variable and elusive elements there is little that is new to be said; all of the good advice on the subject has already been printed a hundred times, and I am writing you only to mention two points.

1. For the reason just given, the federal government can do nothing useful in this field except, perhaps, to collate, from the geographical standpoint, some of the facts already well known locally. There is no need of any special expenditure. The Y. M. C. A. secretaries can give all of the essential facts in short order.

2. The most widespread and most fundamental need in the trainman's life is regular hours of work, and this is a matter that the government cannot handle. Only the officers of the railroads, in co-operation with the trainmen themselves, can change this unscientific, inhuman arrangement, and both of these parties at present don't care, or at least they do not seem to care.

Regular hours of work are essential to the best efficiency, especially for men like locomotive engineers, whose minds must be alert at all times, yet on freight trains these hours are made as irregular as possible. If an evil spirit should try to make them worse than they are he would fail. "First in, first out" makes the hours fluctuate constantly according to variations in volume of traffic and in the number of engines available, and when men lay off on account of sickness a third disturbing element is added. No trainman can tell, for six days in advance, whether he will be called for duty in day time or night time; for 36 hours at a stretch (with a minimum rest period) or for only 8 or 10 hours, followed by a long idle period. This irregular work makes for irregular life.

This has been the condition for many years, and the 16-hour law, while ameliorating the situation by stopping the practice of making 18-hour days, has done harm by encouraging various seductive arrangements to get two days into one, which is most unscientific.

The railroad companies—that is, the managers—ought to make hours as regular as possible, just on grounds of safety. There has been much talk, first and last, about the importance of having enginemen always come on duty fresh and rested, yet all the time every superintendent is approving schedules of work which operate directly against this. To rest the fewest hours possible and then work the longest possible is unnatural, or at least it tends powerfully to thwart the engineman's efforts to form regular, hygienic habits.

The great majority of the trainmen ought to work within a regular 12-hour day. (On passenger runs a 16-hour day is tolerable if there is a regular long rest in the middle of the work day, but I am considering more particularly the through freight trains.) A law to be reasonable and humane and effective should provide, as now, for a 16-hour maximum day, but for a 12-hour normal day. There should be something in the nature of a penalty for exceeding 12 hours. I am considering this matter wholly from the standpoint of hygiene and efficient work; I am not thinking of the rate of pay or whether overtime should begin at the tenth, the eighth or the fifth hour, and of course I am not proposing 12 hours of actual work; I am aiming to define a work-day limit. The ideal day would be from six to six, or seven to seven; but the ideal can be approached by making it eight to eight or even eleven to eleven, or four to four. The night work-day cannot be avoided, of course; and the way to correct that is to adopt the time-honored scheme of making arrangements for having the day men change off and work nights a part of the time.

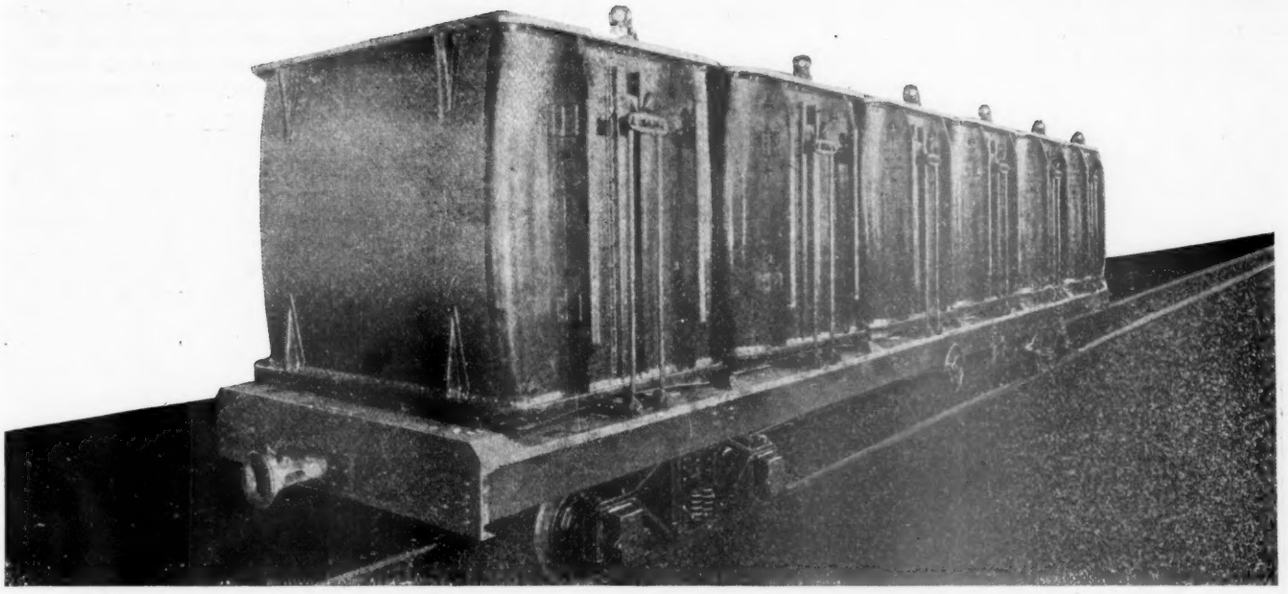
By all rational considerations the railroad manager should require some such reasonable arrangement, be held responsible for it by the state, and punish careless disregard of the rules.

But railroad managers nowadays in matters of this kind do not manage; so, as I have said, the managers and the trainmen should jointly carry out the reform. A percentage of the men would be obliged to work as now very irregular hours, but by friendly co-operation this percentage could be made very small.

Does this proposal seem like a refinement which is too idealistic to merit the consideration of the hard-headed trainmaster of the twentieth century? It is no more of a refinement than the "automatic train control" on which the government has spent thousands of dollars. If trainmen at the away-from-home terminal could have regular hours and reasonably long "lay-over" hours they would have an incentive to find and utilize comfortable quarters, and after a time would cultivate some local interest. A man who runs from A to B on a schedule from 8 a. m. to 5 p. m. ought not to attempt to get back home at the earliest possible moment; he should stay at B until 8 the next morning and then make a second day just like the first one. This is an old idea, and at the present time it would be an innovation sufficient to scare the wits out of the average trainman; if the proposal were to be read to a meeting of present-day railroad men theless, I make it.

K. KOOLIDGE.

NEARLY ONE BILLION is now the annual rate of passenger traffic on the subways and elevated lines of the Interborough Rapid Transit Company, New York City. Several extensions of the lines operated by this company have been put in operation during the past year, and the total number of passengers carried in the twelve months ending on June 30 was 955,133,110. Of these millions, 586 were carried on the subway lines and 369 on the elevated lines. A large amount of new signaling has been installed on the elevated lines during the past year, including automatic block signals on the express tracks.



Coal Handling Equipment for South African Railways at Durban Coal Station

The Container System of Freight Transportation

Interchanging from Motor Truck to Car or Boat; Reduces Freight Handling; Speeds Up Transfer

THE TRANSPORTATION SYSTEMS of the world were never more overtaxed than at the present time and industrial efficiency is seriously hampered because of inadequate shipping facilities. This is true of both railways and waterways but it applies particularly to the railroads and is largely due to the congested condition of freight terminals and transfer points. This condition is the logical result of the fact that the growth of transfer facilities has not kept pace with the increase in business nor with the development of other departments of the transportation lines. In many localities, however, the terminals would be entirely adequate if some means were provided to expedite the handling of less carload shipments and small package freight.

Transportation engineers have studied this problem for many years and a long step toward relieving the situation appears to have been made by the River and Rail Transportation Company of St. Louis, Missouri. This company has developed the Trinity Freight Unit—an interchangeable metal container—designed to carry freight and particularly to facilitate its transfer. This container is designed so that merchandise may be placed in it at a manufacturing plant, or in a warehouse, the container locked and sealed, and then transported by motor truck to a railroad, or to a waterway, where the container and its contents are transferred to a flat car, or to a boat, without rehandling the materials. This not only facilitates the transfer of merchandise, but as the container is both weather-proof and thief-proof, the losses frequently incurred from those causes, are eliminated. In addition, because of the manner in which the freight is packed in the container, and the fact that the freight itself is handled only at the shipping point and at its destination, much of the damage occurring in train movement when goods are loaded loosely in a car or when less carload shipments are transferred at junction points will be prevented.

The complete unit system includes a specially constructed flat car. This car, however, differs from those now in use on the railroads of the United States only in providing a means of clamping the containers fast to the platform of the car. Estimates, based on present prices, place the cost of equipping a car with five 10-ton units at $1,000. A flat car having these special features may be built for the same cost as for building an ordinary flat car, or existing flat cars may be altered to carry the containers at an approximate cost of $250.

Containers made in a number of different ways are provided for carrying various kinds of material—with side opening doors for package freight; with top doors and drop bottom for loose bulk freight; and other types for refrigerator service and for carrying liquids.

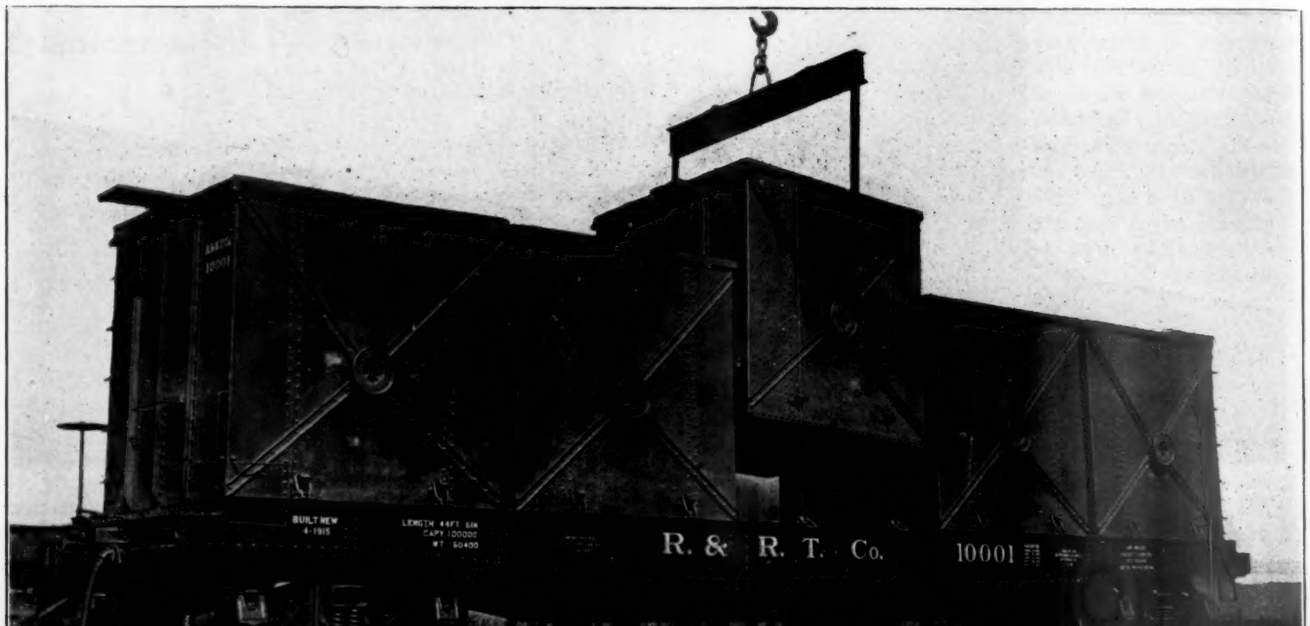
The units are made in capacities of 2-½ tons and 10 tons each and are proportioned so that five 10-ton units, or twenty 2-½ ton units, or several units of both capacities, and for any of the different classes of freight, can be carried on a flat car of 50 tons capacity. They are rectangular in form and are substantially constructed of steel plate rigidly reinforced with angle irons to withstand the strains due to the weight of the contents and the transferring of the unit from one vehicle to another.

Those containers designed for package freight are provided with side opening doors on two sides, through which they are loaded or unloaded. This type of container is fitted with steel cables, attached to lugs at the top corners, by means of which it is lifted and placed on, or taken off of, the truck, car, or boat. To lift the entire unit a crane, derrick, or other lifting device is required and such equipment generally is installed in large freight houses or yards, and at terminals. When such equipment is not available, a portable crane of the motor type may be used. It, therefore, is generally possible to handle the loaded container, but when, at small manufacturing plants, or at outlying freight houses, this can not be done, due to lack of facilities, the car on which the containers are placed may be run alongside a

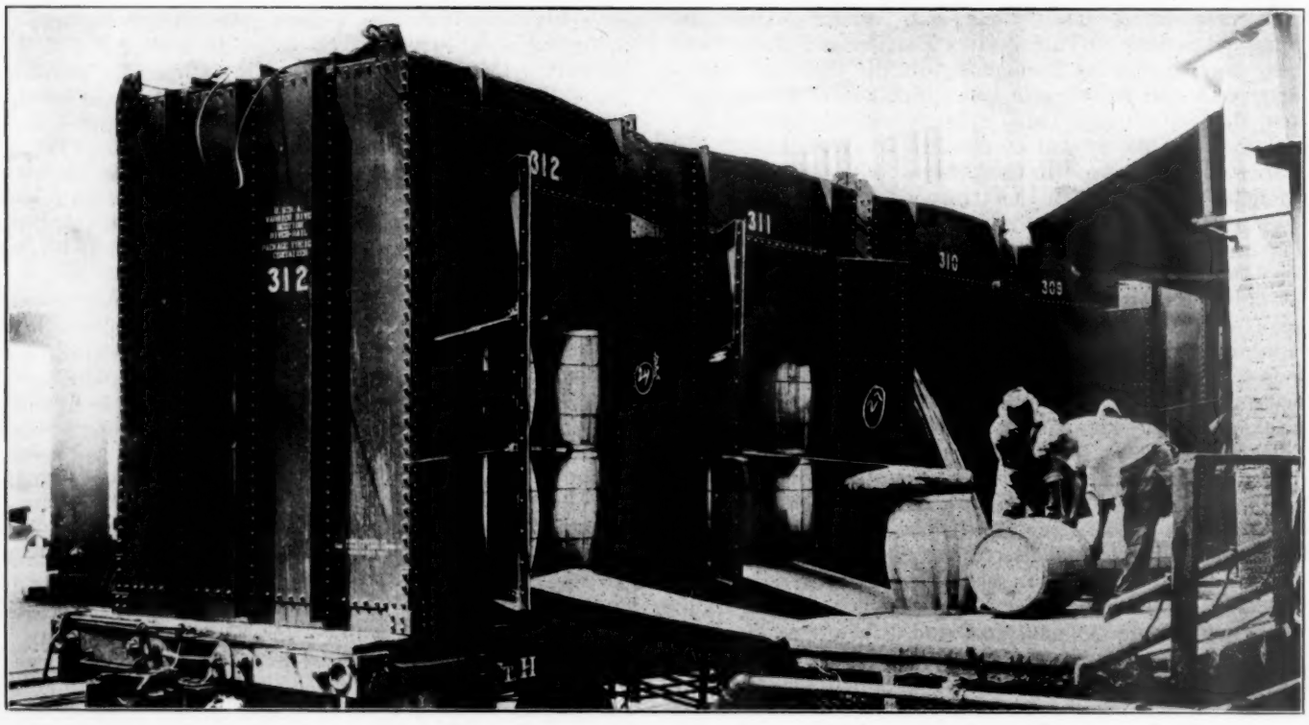
platform and the freight loaded in the same manner as in an ordinary box car.

The United States Railroad Administration adopted this system to facilitate water-rail shipments of war supplies.

In later improved designs, containers for handling loose bulk materials were equipped with ladders, handholds and running boards in the same manner as a box car. This type of container is constructed with top doors, through



Trinity Freight Units—Loose Bulk-Freight Type—on a 50-Ton Capacity Unit-System Flat Car. Method of Handling at Large Terminals



Trinity Freight Units—Package-Freight Type—on an Ordinary Flat Car. Method of Loading at a Small Station Where No Handling Equipment Is Available

Twenty of the 10-ton package units were built and gave satisfactory service in the New Orleans district in handling package freight.

which the freight is loaded, and sometimes, with a drop bottom door for discharging the load. It may be loaded by hand or by means of an automatic bucket, or by other

devices for handling loose materials. After loading the container the doors are closed—and locked if desired—and the entire load lifted by means of specially designed lifting links suspended from a spreader bar. These links engage in slotted trunnions on the sides of the container keeping it in an upright position by means of a latch on the links. When the container is in the desired location, the link latch can be released and the container overturned, or the drop bottom doors can be released—when the container is of that type—and the load discharged.

A similar means of handling loose bulk material has been in use for some time past on the South African Railways at the Durban Coal Station.

This equipment was built by the Canadian Car & Foundry Company. It consists of five rectangular containers or buckets, of 10 to 12 tons capacity, which are carried on a flat car designed especially for the service. The buckets are very similar in construction to the loose bulk freight container of the Trinity Freight Unit system. They have a strongly reinforced steel plate shell and may be handled by means of a hoisting tackle or may be rolled on or off of the car.

There are advantages in this method of handling large quantities of coal or similar material: The use of buckets of such large capacity makes it possible to move loose material in compact packages; it eliminates most of the hand labor necessary in shipping such material loosely in a gondola car; and, where coal pockets and hopper cars are not available, provides an efficient means for handling coal in railroad or industrial work.

This system of transportation is flexible, as any or all of the various classes of freight may be transported in small quantities on the same car. This gives many of the advantages of carload shipments and none of the disadvantages of the present method of shipping less carload freight.

It will unify the highways, the water ways and the railways and will deliver freight from origin to destination without rehandling, regardless of distance or number of transfers. It will increase the transportation mileage of truck equipment; permit the loading of freight before the arrival of the car or boat and cars may be unloaded and released in a very short time as compared with other methods of transfer. The great decrease in the time required for loading or unloading will increase the capacity of terminals without any outlay except for the lifting apparatus. Its use should reduce joint river and rail rates and not only speed up river traffic but relieve congestion at ports and terminals.

Estimates based on the performance of the Trinity Freight Unit in government service indicate that the handling of freight is not only greatly expedited by its use but can be handled at from 300 to 400 per cent less cost than with any of the present methods.

The apparent advantages of this container system of handling freight and the possibilities it offers for relief to the overtaxed transportation systems warrants a careful study of its use.

The difficulties in the way of its general adoption are not insurmountable and may be overcome by the gradual introduction of the interchangeable units. Its progress will be watched with interest by the transportation world.

FOR A "FULL FREIGHT CAR."—Manufacturers of the Long Island district have decided to adopt and follow to the largest possible extent the "full car" plan. At a conference of half a dozen of the largest manufacturers in the district it was decided that the smaller concerns would be solicited to join and to co-operate in putting the plan into operation in Queens. This plan means that every car of freight that is shipped out of the district will be loaded to capacity. If this is followed it will greatly reduce the shortage in cars.—*Brooklyn Eagle.*

Lackawanna Proposes a Stock Distribution

THE DELAWARE, LACKAWANA & WESTERN has asked permission of the Interstate Commerce Commission to increase the amount of its stock outstanding. The application itself has not been made public but the lawyers' brief accompanying the petition was and is in part as follows:

"The organizers of our company were interested in anthracite coal properties and most of its lines of railroad were constructed for the purpose of transporting such coal to market.

"Prior to 1900, its interests were confined to the operation of its coal mines, and to the transportation and sale of its coal. It did not seek and was not equipped to handle, to the satisfaction of the public, either other freight or passenger business. During the past 20 years the railroads of the company have been developed for transportation purposes generally. New rails, ballast and ties, new bridges, stations and shops, signals and interlocking, branch lines, yards, sidetracks, switches and terminal facilities, have all been provided, together with modern equipment for both passengers and freight.

"During the 11 years preceding Federal control the company expended an average sum of $2,000,000 per year in betterments and some $20,000,000 in new construction.

"It is now equipped to handle both freight and passenger business as efficiently and economically as its competitors and with at least equal satisfaction to the shipping and traveling public.

Corporate History

"Our company is a Pennsylvania corporation and has had the statutory powers prescribed by various special acts of the legislatures of Pennsylvania, New Jersey and New York. Such acts authorized an increase in the capital stock of the company for the sole purpose of new construction of its owned lines in the State of Pennsylvania. To obtain general statutory authority to increase its stock it was necessary, under the laws of Pennsylvania, for the company to formally accept its constitution. A section of such constitution, however, prohibited a railroad company from engaging in the business of producing coal.

"Partly because of the history of the company, partly because of a fear that if it should divest itself of its coal properties the same might be acquired by competitive interests and the coal tonnage diverted from its lines, the board of managers have been unwilling in the past to segregate its coal properties. The result has been that there has been no increase in the amount of its capital stock since the year 1876, when it amounted to $26,200,000, except on two occasions.

In 1909, on merger and exchange, some $4,000,000 of stock was distributed as a 15 per cent stock dividend. In 1914 the stockholders subscribed for $12,000,000 of new stock, for the construction of a 30-mile cut off line of new railroad in the State of Pennsylvania.

"One of its merged lines was subject to $320,000 of bonds, $102,600 of which is outstanding. Otherwise the company operates approximately 960 miles of road either owned or leased in perpetuity through a densely populated region, and including second, third and fourth tracks and sidings, has about 2,700 miles of track.

"There is outstanding in the hands of the public, in addition to its own present capital stock of $42,220,550, $44,222,600, par value in stock of its leased lines and $53,800,257, par value in bonds. Of the latter amount $6,537,000 represents par value of bonds of its ferry companies, so that the total outstanding railroad obligations,

including stocks and bonds of its owned and leased railroad companies, aggregate $133,706,407 par value.

"In the data prepared for the Bureau of Economics in connection with the recent increased rate case, we showed a total investment in road and equipment to December 31st, 1919, including materials and supplies, of $244,272,965. Of this amount some $21,000,000 represented investments actually made, but not entered as such on our books because made prior to July 1st, 1907, when, under the existing practice of the company, the same was charged to its operating expenses or to income account. On the basis of taking property investment as value, under the Transportation Act, we would be permitted to retain $14,640,000 of our net railway income. If to this we add additional income not subject to the act, of $401,710, and subtract rentals (*i. e.*, dividends on stock and interest on bonds of leased lines), of $5,084,552, we have a balance of $9,957,158, which would be sufficient to pay 6 per cent on $165,952,633 of capital stock; 7 per cent on $142,245,114; 8 per cent on $124,464,475; 9 per cent on $110,635,088; 10 per cent on $99,571,580.

"Compilations which we have just completed on recent business, adjusted to include the Wage Board and the rate advances, would indicate a considerable increase in net revenue.

"Thirty per cent. upon our present capital stock of $42,000,000 would be $12,600,000 per year. This amount we will earn net from our railroad properties after payment of rentals in prosperous years, in my judgment.

Purposes of the Application

"From the foregoing it is apparent that the financial policies of the company, as to capitalization and otherwise, have been controlled by its ownership of coal mines and its charter restrictions growing out of such ownership. But for this relationship to coal properties and the consequent legal restrictions, its financial policies and capitalization would have been entirely different.

"Under these circumstances, if we are now to change fundamentally the plan and purpose of the company, divest it of its coal properties and convert it into a transportation industry alone, we should readjust its financial structure so as to make it conform now to what it would undoubtedly have been except for the conditions which are now to be changed.

"Manifestly there can otherwise be no justification for accepting the disadvantages of disposing of our coal properties. To establish for the company a normal and adequate financial structure adapted to the company's changed conditions and its expected growth and expansion as a transportation company only is an essential part of our plan.

"Our board of managers have concluded that the company can now safely divest itself of its coal properties, and, if the commission assents, are ready to accept the constitution of Pennsylvania, whereupon the company will be authorized to increase its capital stock as may be proper. In their opinion, existing public sentiment, as expressed in legislation, both in Congress and in the State of Pennsylvania, and by the Courts of both the United States and the State of Pennsylvania, favors the course so determined upon and that a common carrier largely engaged in transportation of passengers and freight should not be engaged in any other business.

"A separation of its coal properties will moreover enable the management of the company to devote itself exclusively to the development and operation of its railroad properties.

"Upon such separation we will have the same statutory powers as have other corporations to increase our capital stock.

"It is recognized that the stockholders have been justly entitled to the net earnings of the company during past years.

"Its managers have withheld a large part of such earnings and applied the same to additions and betterments to its railroads and to investments which would strengthen it financially. The right of its stockholders to have stock issued to them in lieu of dividends, where their earnings were so used for capital purposes, is clear, but could not be accorded because of statutory restrictions. Now that such restrictions are to be removed we desire to immediately give to our stockholders what they are fairly entitled to. We believe our conservative methods were advisable in any case under the competitive and other conditions prevailing in the past. We now feel that the stockholders should be encouraged in every posible way in order that they may continue and extend their investments in the stock of our company. We ask to be permitted to capitalize our surplus and distribute the same as a stock dividend. The proposed issue of stock would be most helpful for such purpose. The stockholders would feel that their equities were being recognized and the managers would feel that their course had not resulted in loss to the stockholders.

"It is their view moreover that our small capital and high rate of dividend, which doubtless should be increased in the near future, creates an erroneous impression with the public that its rates are excessive. The public does not know that the company has more than twice the amount of its capital stock in surplus earnings which its stockholders have been good enough to permit it to retain. Nor does it know that the total investment in its owned and leased properties devoted to public use is about double the aggregate par value of the outstanding stocks and bonds.

"If the capital stock of the company should be increased as requested, so that its dividend rate be normal and represent more nearly the rate of return which the stockholder is obtaining upon the moneys invested, no such view will obtain.

"The public also contrasts our small capital and large earnings with the capital and earnings of other carriers, resulting in erroneous inferences both as to our earning in excess of a proper return for a public carrier and in excess of the earnings of other carriers.

"It will be observed that the present application is not made in contemplation of or in connection with any new financing or new construction or other matter in which there is any public interest. In our judgment, the Commission would be entirely justified in holding, with respect to this application, that the requirement of the act that the proposed increase shall be shown to be compatible to the public interest does not apply. In other words, that such requirement is limited to a case where a public service company proposes to obtain money from the public, directly or indirectly. The capitalization of our surplus and the giving to our stockholders of three certificates in place of one, to represent their respective same proportionate interest in the assets of our company, is a matter in which, in our judgment, the stockholders of the company solely are interested, as the public can in no way be affected thereby."

PASSENGERS WRECK SLOW TRAIN.—Press despatches from Buenos Ayres report that a train on the Southern Railway (presumably Buenos Ayres Great Southern), which usually makes the run from Talleres in 18 minutes, but was delayed recently for an hour and a half, finally arrived at the Buenos Ayres terminal with two cars missing and the furnishings of the others completely wrecked and their windows broken. The damage expressed the displeasure of the passengers over the delay. The coaches missing had been set on fire. After venting their anger in this fashion, most of the commuters got off and walked till they reached the trolley and taxicab zone. The railroad company, hearing of the trouble by telephone, called police reserves to the terminal to protect their offices against the ire of the remaining passengers and those of other delayed trains.

Traveling Engineers Hold Annual Meeting

Best Methods of Handling Freight Trains, Draft Appliances and Other Subjects Were Discussed

THE TWENTY-EIGHTH ANNUAL CONVENTION of the Traveling Engineers' Association was held at the Hotel Sherman, Chicago, September 14 to 17, inclusive. After the formal coming exercises President G. A. Kell (Grand Trunk) addressed the association in part as follows:

President Kell's Address

During the past few years, particularly during the great war, special efforts were made by every man employed in the operation of railroads to conserve coal in particular and to operate the railroads at the lowest possible expense in general. It is just as important today to save coal and supplies as it ever has been. There should be no relaxation on our part in any way, but every effort should be put forth to get more skillful operation of the locomotives on the road with increased efficiency in handling trains at the lowest possible cost of operation.

The drastic labor conditions that prevail throughout the country are cause for great concern. There is social, racial, and industrial unrest everywhere, brought about to a great extent by the spirit and practice of profiteering and by the high cost of living. Strikes and tie-ups have taken place; in some cases due to over-zealous self-appointed labor leaders more than to anything else. Traveling engineers, whose conservatism and loyalty have never been questioned, who are scattered throughout the country and who come in contact with a great many railroad employees, can do a great deal towards influencing the rank and file of the men toward taking the right view of the present critical conditions. If ever there was a time in the world's history when calm and cool judgment should be exercised, now is the time.

Best Methods of Handling Freight Trains

In order to handle freight trains efficiently and economically, it will be necessary to take into consideration the locomotive which hauls the train, as well as all other equipment used in doing the work; the locomotive must be put in the best possible condition before leaving the shop, so that it can handle the train efficiently and economically. With the eight-hour day and time and half time for overtime, the locomotive must haul the allotted tonnage over the division in as short a time as posible. This cannot be done with a 50 per cent engine.

CONDITION OF CARS

Cars should be in good condition before being sent out in a train to avoid delays due to accidents on the road. In order to do this, cars should be properly inspected and repairs made, or the cars switched out. It is necessary to have receiving yards laid out so that the work can be done quickly, and facilities should be provided to take care of all the details of inspection at one time.

All trains when stopped in receiving yards should have couplers stretched from engine to caboose; this can be done by having some hand brakes set on the rear of the train and have the engine pull the slack out. It is better to delay a train in the yard for inspection and repairs than it is to have it delayed out on the road. While in the yard only one track is blocked and other trains can pass on some other track, but on the road, when stopped by an accident, other following and opposing trains, in charge of crews making overtime, are blocked. When a train is delayed in the yard there is no crew time to be considered.

The same can be said of hot boxes. With the long and heavy trains that are being handled today, when you have to set out a hot box about 75 or 90 cars from the engine, it takes time and very often results in damage to other cars in the train.

All trains when stopped in the yards before the engine is cut loose should have the air brakes applied with a full service application, so that the air inspectors can go over the train and mark up the piston travel and defective brakes or brakes that are cut out, so that cars can be given the proper attention before being sent out of the dispatching yard. If the defect is such that the car must be shopped, it can be switched out while switching the train and then it will not have to be done after the train is made up, which very often delays the crew at the start of the trip and causes overtime.

All despatching yards should be provided with a yard air brake testing plant, and as soon as the train is switched the air should be coupled up from the yard plant and brake pipe leakage taken up, piston travel adjusted and retaining valves tested.

When the train and engine crews arrive, all that they will have to do is to couple the engine to the train and charge the brake pipe to the maximum pressure carried and test to comply with the rules in effect on the road. It has been found when trains have been worked properly by air men, all that is necessary for the crew to do is to know that the brakes will apply and relase at the front and rear end of the train before leaving the yard.

HANDLING FREIGHT TRAINS ON LEVEL DIVISIONS

The trains on level divisions should consist of all through loads as much as possible, and the train should consist of as much tonnage as the locomotive can handle and make an average speed of at least 14 miles an hour. If it is necessary to fill out a train with cars for intermediate points or to give the train local cars, they should be switched on the front part of the train in station order, so that only the cars to be set off will have to be handled.

With the long heavy trains that are being handled at the present time, after a train has started out of the yard it should be kept moving, for the stopping and starting is what causes delays and damage to equipment.

The train should not be stopped for coal over the division and should be stopped for water as few times as is possible. In making stops for coal and water, the engineer should be very careful not to make spot stops with a freight train.

All long and heavy freight trains should be stopped with one application of the air brakes and the engineer should endeavor to keep the slack bunched from the front end. This can best be done by making the initial reduction just sufficiently heavy to run the slack in and follow up with light reductions until the train is stopped. In order to keep the front end from running out, the engineer should make a reduction of about eight or ten pounds about 60 ft. before coming to a full stop. This is to keep the air brakes applying stronger on the front end to hold the slack in and leave the brake applied on the train when the engine is cut off. Engines so equipped give splendid performances both from capacity and fuel economy standpoints.

In starting a train with one engine, the engineer must be very careful until he has pulled all of the slack out of the draw-bars before fully opening the throttle. There is about 9 to 12 in. of slack between the cars, and this will increase

on the front end in starting, due to the compression of the draw-bar springs and the dead weight of the cars that have not been started. The engine will move about 60 to 70 ft. on a 70 to 75-car train before the rear end moves on the level and more on an ascending grade.

In starting a two-engine train on level roads, the lead engine only should start to pull and take up all the slack that it can. Then the second engine should start to pull by opening the throttle gradually until the entire train is started, then increase the throttle opening as may be required. The train should be moved a a slow rate of speed for a distance of just one train length, so that the trainmen can look over the train and in case any brakes are sticking they can be released. Very often it is possible to locate a defective coupler in the train when it would not be noticed at any other time, except when the train is stretched out so far. This will occur at times when couplers are badly worn and the draft spring broken or worn.

Despatching Trains From Yards

Where the yard is equipped with an air-brake testing plant, see that the brake pipe leakage is below standard allowance and all other work done before the train is ordered to leave the ward, so that when the road engine arrives in the yard it can be coupled onto the train at once and make the road test.

The success of the trip greatly depends on the start out of the yard. The importance of having the train ready to move by the time it is called is readily seen, for one hour delay at the start means overtime on the eight-hour day and 12½ mile an hour basis.

The train despatcher must not stop trains unnecessarily, for an avoidable stop made by a heavy freight train means a loss of time in stopping, then getting the flagman in and starting, and very often the train is parted in trying to start, due to a broken coupler or coupler slipping by which might not have occurred if the train had not been stopped. There is also an excessive amount of fuel consumed by the extra stops and in trying to make up some of the time lost by the stops.

There is no economy in loading a freight train so that it cannot get over the division without making overtime.

Handling Freight Trains on Mountain Divisions

On divisions where the grades are heavy and it is the practice of using one or more helpers on the ascending grades, it is important that no weak cars be used in heavy tonnage freight trains, if possible to avoid it. With the Mallet and Santa Fe type locomotives having tractive efforts of from 70,000 lb. to 105,000 lb. cars with weak end and center sills or weak couplers are very dangerous to handle in trains of this kind. There should be instructions given to all yard masters and car inspectors that cars that appear to be old or of weak construction should be switched out of heavy trains where helpers are used and placed in a train to be run without a helper or a train hauling light tonnage.

It has been demonstrated from time to time that it is not necessary to use hand brakes on freight trains on descending grades any more than it is on passenger trains, when the equipment is properly maintained. With the ordinary air brake, if properly maintained and manipulated, it is possible to handle freight trains on heavy descending grades with the air brakes with a greater degree of safety than with the use of hand brakes, because it is possible to do the braking more uniformly throughout the train and to maintain a more uniform rate of speed, which is very important, as the wheel temperature is less with a low and uniform speed than with the use of hand brakes.

According to the information obtained from the different roads, the permissible brake pipe leakage on trains of 30 to 100 cars varies from five to eight pounds per minute, which is about all the air feed valve will take care of and about the limit of leakage with which an engineer can do a good job of braking. It has been found by actual tests on heavy mountain grades that it is very difficult to release the brakes on the rear end of 75 to 90 cars with a brake pipe leakage of over seven pounds, and if the brakes are not released on the rear end after each application the tendency for jerking the train and excessive heating of wheels is greater.

Some roads are handling trains on level tracks as well as on heavy mountain grades with electric power, and some other roads are figuring very strongly on electrification. While this method of operation applies only to a few roads, we are of the opinion that more roads will take up the matter of electrification in the near future from the fact that with the electric locomotive the terminal delays can be reduced considerably, as well as delays in stopping for water and coal, and it has been demonstrated that an electric locomotive can be run over three divisions of over 100 miles each, by changing crews, without any delays to the locomotive. This would indicate a high point of efficiency from the fact that it could be a no-stop operation from one end of the division to the other. This would eliminate the pulling out of draw-bars and damage to equipment due to starting and stopping. It would also reduce the cost of brake shoes and other brake equipment.

On heavy grades the speed of the train is controlled while descending, by regeneration, but it must be understood that by regeneration the speed of the train is only held under control and it will be necessary to use the air brakes to stop the train.

The report was signed by Frederick Kerby (B. & O.), Chairman; M. O. Davis (A., T. & S. F.), M. A. Daly (Nor. Pac.), P. G. Leonard (G. H. & S. A.) and Malon Laquay (Grand Trunk).

Discussion

The discussion dealt almost entirely with the question of how best to make water stops and with air-brake conditions. The practice of stopping short of the water crane, then moving the train up slowly to the final stop, was favorably commented on by several of the members. This practice, as opposed to the more common requirement that the train be stopped and the engine to cut off before moving to the water crane, results in a saving of time ranging all the way from 20 minutes to 1 hour and 30 minutes, depending upon the amount of brake pipe leakage which must be overcome in recharging the train after the locomotive has been coupled on. Furthermore, the experience of some of those speaking has been that a reduction in the amount of damage to draft gears has been effected by the adoption of this practice, because much of the damage is caused by brakes sticking following the recharge and release after a water stop. It was evident, however, that the roads where this practice has been adopted are comparatively level, where under which condition 3,000-ton to 4,000-ton trains can be handled successfully by this method..

What Are the Most Suitable Draft Appliances?

The most suitable draft appliance is that which will produce the required draft with least back pressure under the varying conditions of locomotive operation. That such draft be developed uniformly is greatly to be desired in order that cinder losses may be reduced and the mixture and chemical union of gases in the fire-box improved, and also because the peaks or maximum efforts of intermittent draft are largely responsible for the plugging of flues; the loss in superheat caused by obstruction to the flow of gases in the superheater tubes frequently being as high as 32 per cent.

Development of draft apparatus which gives promise of approximately complying with these requirements has been

under way during the past year or two and should be encouraged; but for the immediate need we must confine our efforts to the fixtures at hand or easily obtainable. The required draft in many instances is less than that which will develop the maximum evaporation. Engines in switching service or regularly in light work of other nature may often be run successfully with draft appliances which demand less back pressure than would be required if the same engines were engaged in more severe continuous work.

While the cinder losses will average approximately 6 per cent of the fuel burned, these losses frequently increase to from 18 per cent to 23 per cent during the period of maximum effort. However, the amount of fuel used per unit of work done decreases rapidly and consistently as the tonnage per train increases toward a reasonable maximum. Therefore, in general, the draft appliance should be so constructed as to provide for satisfactory performance at maximum capacity of each locomotive, and fortunately such arrangement will be found as generally satisfactory as is possible with present apparatus during periods of lighter work.

Section III Committee Report

Results of a series of nozzle tests were recorded briefly in the report of the Committee on Fuel Economy and Smoke Prevention at the June convention of the American Railroad Association, Section III, Mechanical.*

This committee summarized the results of these tests and its conclusions as follows:

"They indicate that under the conditions peculiar to this test with a nozzle having four internal projections it was possible to obtain a higher equivalent evaporation per hour with less back pressure than with a circular or rectangular nozzle having approximately the same net area.

"Your committee does not consider the information now available sufficiently complete to justify positive conclusions as to the most efficient shape of nozzle, and is only in position to report that the circular form of nozzle does not result in the highest vacuum and the least back pressure. As to what form will produce those conditions it is impossible to say without an extended investigation involving a long series of test plant observations.

"It seems evident, however, that all preconceived ideas of exhaust jet action must be revised to agree with the apparent fact that the best results will be obtained when the jet contour is interrupted, as is the case both with the internal projection nozzle and with the one having one axis longer than the other."

The increased draft obtainable by use of the four internal projection nozzle is said to be due to the increase in gas entraining capacity which results from breaking up the continuity of outside of exhaust steam column, thus increasing the surface of the steam jet with which the smoke-box gases may come in contact and promoting the intermingling of these gases with the steam jet.

Indicator cards taken during tests with the internal projection nozzle illustrate clearly that at low temperature the steam does not flow so rapidly as at higher superheat, that with low superheat there is higher back pressure and also a lower initial cylinder pressure even when the steam chest pressure is higher for low superheat than for high superheat. This increase in rapidity of flow due to superheat accounts for the "snappier" exhaust of the superheated locomotive; and as the amount of draft depends, among other conditions, on the length as well as the speed of exhaust jet, it might appear that a reduction of nozzle size should accompany the superheating of a locomotive. However, this has not been found necessary in many instances and a conclusion that draft appliance details, including size of nozzle tip, when most suitable for locomotive using saturated steam, should not be changed when superheating apparatus is installed, is sustained by carefully conducted tests at the Pennsylvania Railroad testing plant at Altoona. We are justified, therefore, in using smaller nozzles with superheated steam than were most suitable for saturated steam only as a last resort.

* See the *Daily Railway Age* for June 11, 1920, page 1705.

The Basket Bridge Nozzle

Attention is also invited to the nozzle tip arrangement in use on a large number of New York Central locomotives which consists of the usual circular nozzle provided with a so-called "basket bridge," consisting of two splitters set at right angles with each other with the point of intersection directly over the center of nozzle, the splitters being arched to 1¼ in. above the tip at the center. This device is giving very satisfactory service, the use of splitters so arranged having made it possible to increase the effective nozzle opening very materially above the required opening of the plain circular nozzle tip. Engines so equipped give splendid performance, both from capacity and fuel economy standpoints.

N. & W. Tests

In the June, July and August, 1918, issues of the *Railway Mechanical Engineer*, there appears a series of articles written by H. W. Coddington, engineer of tests of the Norfolk & Western, giving accurate and valuable information obtained from extensive tests under most carefully arranged conditions in road service. The experiments indicated clearly the possibilities for improvement in draft and locomotive performance by variation from the standard practices and appliances which have been in use for years. These tests also show conclusively that by increasing the external surface of the exhaust column, thus affording greater opportunities for contact of this steam column with the front end gases, that material improvement in draft and locomotive performance can be obtained.

The results recorded were obtained during tests with Norfolk & Western engine No. 100, class "K-1" 4-8-2 type. The original nozzle was 7 in. in diameter with 9⅜-in. splitter, and a free area of 35.86 sq. in., 18-in. stack and 26½-in. inside extension. As a result of experiments the stack was changed to one of 24-in. in diameter, with 26½-in. extension and 14-in. diameter annualar waffle iron nozzle, with effective area of 49.35 sq. in. The steaming capacity was improved; exhaust pressure with the circular nozzle and splitter was 10.94 lb., with the waffle iron nozzle, 4.54 lb.; front end draft with the circular nozzle and splitter was 8.91 and with the waffle iron nozzle 8.63 in. of water, and the locomotive under the decrease in back pressure developed approximately 140 additional horsepower. Using the very conservative figure of 5½ lb. of coal per indicated horsepower per hour, this shows a possible saving of 770 lb. of coal per hour, while the locomotive is working at the rate maintained during the test runs.

Mr. Coddington very recently advised us that the front end arrangement described has been applied to the U. S. R. A. Mountain type locomotives, N. & W., class K-2, with as great resultant benefit as was observed in the K-1 class.

The Theory of Draft Action

Supplementing the conclusions on this subject, as stated by the Committee on Fuel Economy and Smoke Prevention, it seems that any change from the plain circular periphery of the steam jet increases its efficiency in producing draft; one reason for this is that a circle being the shortest possible boundary for any given area, if the cross section of the steam column between the nozzle and stack is circular, the column will have less surface area than it would have if its cross section was any other form. The gas "entrainment" theory is supported by all investigation. However, during the Norfolk & Western tests it was found that the best results were obtained when the exhaust steam column struck the

sides of the stack 38 in. or 70 per cent of the length of stack, including the extension, below its top. Every traveling engineer knows that when the exhaust does not essentially fill the stack at the top there is a down draft at the locality not filled and therefore both the so-called "entrainment" and piston action assumptions must be considered when studying this most interesting and important matter.

The expulsion of air and gases from the smoke-box by means of a steam jet directed up the stack is accomplished by the steam jet, either blower or exhaust, forcing (not pulling) air and gases through the stack. A steady flow of steam out the exhaust nozzle or blower will produce draft because the outside surface of the expanding column is broken up irregularly into numerous sections or jets which engulf within the column as a whole and pocket against the sides of stack many small portions of the gases in smoke-box or stack, and thus by pushing innumerable small quantities of smoke-box gases out the stack in this manner reduce the smoke-box pressure.

The Multiple Nozzle and Stack

It appears that the Norfolk & Western has gone farther in the right direction than the other experimenters, at least in so far as applications in service is concerned, but in stack investigation they varied only the diameter of the stack and extension and the length of stack extension inside the smoke-box, and they got best results from the longest extension used. Developments made by William Elmer of the Pennsylvania are therefore of special interest. He found by a long series of tests that best results in draft production, by means of a steam jet issuing from a circular nozzle tip, were obtained when the diameter of conduit or stack was 3.1 times the diameter of nozzle and when the length of conduit or stack is from five to six times its diameter and when the jet first filled the conduit at about the center of the conduit. Obviously, it is impracticable to provide a modern locomotive with a stack from 10 to 12 ft. long, but by exhausting through several nozzle tips suitably placed below a stack containing a nest of conduits he was able to accomplish a working basis for the desired dimensions within clearance limits and to increase the effective nozzle opening 30 per cent as compared with that of the largest single circular nozzle which it had been possible to use. The multiple nozzle and stack also materially increase the draft.

It does not require exhaustive thought to determine that a stack can be too short and that a stack can be so long that friction of gases and steam within it will detract from the benefits derived by having just enough stack length. The multiple nozzle and stack design provides a method for equipping modern locomotives with stacks of sufficient diameter and length and it also provides for an extensive increase in the surface of the exhaust steam column between the nozzle tip and stack as well as for a very material increase in effective nozzle opening.

Some most interesting experiments conducted by the mechanical department of the Big Four during the past year indicate the advisability of maintaining the same average exhaust pressure while a locomotive is operating at maximum capacity during the entire range of speeds, and they have equipped at least one locomotive with apparatus which automatically adjusts the cut-off so as to maintain a predetermined exhaust pressure at all speeds. It is not the intention to discuss this invention, but we urge the installation of back pressure gages on all road locomotives, as knowledge of this pressure will not only aid greatly in improving draft conditions and apparatus, but will enable the engineers to operate locomotives more efficiently.

Distribution of Draft Through the Grates

Even a most efficiently developed draft in the smoke-box will only partially obviate some of the present losses and inefficiency, unless that draft is most advantageously distributed throughout the fire-bed. Use of the so-called checkered arch appeared to be a move in the right direction, but difficulties have arisen in connection with its general use. The standard arch, as usually applied, causes the draft to be applied most severely through the back grates and, to avoid the ill effects of excess air through this section of the fire-bed, firemen have resorted to excessively heavy firing on the back gates. We have decried such practice as wasteful—perhaps without entire justification under the existing unequal distribution of draft.

Draft deflector plates below the grates or variations in air inlet openings through the grates so as to equalize or properly distribute the draft through the fire, seem to be required when the standard arch is used, but because of the difficulties which would be encountered in following either of these suggestions, suitable changes in the location of arch bricks or the reduction of air openings through the rear grates are recommended—preferably the former, for we fully appreciate that the best performance demands the maximum possible opportunity for air to pass through the grates.

The report was signed by H. C. Woodbridge (Loco. Stoker Co.), chairman; W. G. Tawse (Loco. Superheater Co.), W. M. Cooper (Grand Trunk), H. L. Harvey (C. & N. W.) and T. L. Kenney (Big Four).

Discussion

Referring to the use of the checkered arch several members were disposed to question the statement that the standard arch as usually applied is the cause of the apparently heavier draft at the back end of the grate. In some cases this was considered to be due to the tendency for a heavier fire to accumulate at the front of sloping grates, thus leaving less resistance to flow of air through the rear portion of the grate. Another reason suggested was that the openings at the back end of the ash pan through which the grate rigging passes increased the air admission under the rear grate sufficiently to reduce the resistance to the flow of air through the grates at this point. There was some difference of opinion as to the advantage of the checkered grate, although in one case, where comparative tests had been made in which the coal was measured, the coal consumption had been found to be less with the checkered arch than with the standard arch. It had also been found of advantage in reducing smoke on switch engines in a terminal where attention to the prevention of smoke was necessary.

It was brought out in the discussion that the basket bridge in use on the New York Central had made it possible on one class of engines to increase the nozzle opening from 5½ in. to 6⅝ in.

In closing the discussion Mr. Woodbridge called particular attention to the use of a back pressure gage, installed in the cab and connected through branch pipes to the exhaust pasages of the cylinders, which has been found of value in comparing the efficiency of the draft conditions on different engines and providing the engineman with a check both on these conditions and on his handling of the engine.

Other Papers and Addresses

Papers and reports were also presented on the following subjects:

By-Pass, Relief and Drifting Valves; Effect of Slack Wedges on Side Rods and Knuckle Pins; Effect of Different Fuels and Their Preparation on Operating Costs, and The Nicholson Thermic Syphon.

A. G. Pack, chief of the locomotive inspection bureau of the Interstate Commerce Commission, also presented a paper on "Locomotive Boiler Explosions," accompanied by slides, in which he set forth the various causes of boiler explosions. He also dealt at length with the investigations which have

been conducted by the Locomotive Inspection Bureau on the effect of various locations and methods of connecting water glasses and gage cocks, on the water level reading.*

Association Business

The Committee on Amalgamation reported favorably on accepting the invitation of Section III—Mechanical—to become a division of that organization. Action on the matter, however, was deferred until the next convention.

The following officers were elected for the coming year: President, W. E. Preston (Southern); first vice-president, J. H. De Salis (N. Y. C.); second vice-president, F. Kerby (B. & O.); third vice-president, T. H. Howley (Erie); fourth vice-president, W. J. Fee (Grand Trunk); fifth vice-president, J. N. Clark (Southern Pacific), and treasurer, David Meadows (M. C.). J. D. Heyburn (Frisco), J. P. Russell (Southern), and V. C. Randolf (Erie) were elected to succeed the three retiring members of the Executive Committee.

State Commissioners to Fight

Washington, D. C.

The state railroad commissioners, through the National Association of Railway and Utilities Commissioners, are preparing for a "last ditch" fight against the efforts of the railroads to establish for intrastate traffic the percentages of increase in freight and passenger rates which were recently allowed by the Interstate Commerce Commission. They take the position that if the efforts of the carriers are successful in the proceedings that have been instituted before the Interstate Commerce Commission and the courts, they will have succeeded in stripping the state commissioners of all effective power over state rates.

At a meeting of members of the National Association of Railway and Utilities Commissioners held in Chicago on September 11, a committee of five was appointed to follow all litigation in which carriers attempt to secure an interpretation of the transportation act, "which will diminish the powers of the states to control intrastate rates and regulations of carriers." Under the resolutions adopted, this committee is to co-operate with the officers of the association, communicate with all state commissions, and may file a brief or briefs on behalf of commissions authorizing it to do so; but no commission is to be precluded thereby from taking such separate action as it may desire. President W. A. Shaw of the association appointed as the members of this committee Fred W. Putnam of Minnesota, H. G. Taylor of Nebraska, R. Hudson Burr of Florida, Joseph A. Kellogg of New York, and Joshua Greenwood of Utah. The committee has sent a letter from Washington to all the state commissions, as follows:

"The situation is serious. The state commissions generally have allowed freight rate advances upon intrastate traffic corresponding to the advances allowed upon interstate traffic by the federal commission. The Illinois commission has, however, allowed 33⅓ per cent, the Texas commission the same per cent, and the Nebraska commission 25 per cent. Several commissions have restricted the advances on particular commodities. In states where passenger fares are limited by statute, they have refused to sanction the proposed passenger advance.

"Acting under paragraph 31 of section 13 of the Interstate Commerce Act as amended, the carriers have begun proceedings before the federal commission asking that commission to substitute rates made by it for the rates prescribed by state authority. These so-called Shreveport petitions filed by carriers attack not only the statutory passenger rates, but attack also freight rates in practically every case where the state commission has found occasion for denying any part of the increase asked for. The carriers generally, if not uniformly, have taken the position before state commissions that a state commission has no option but to allow the same increases on state traffic as have been allowed by the federal commission on interstate traffic, even though in a particular state lower rates on state traffic may yield a full fair return on the value of the property devoted to such traffic. In other words, carriers maintain that the value of property devoted to state traffic and the net revenues therefrom are immaterial, and that the determining factor is the percentage of advance allowed for interstate traffic by federal authority.

"At the hearing in Chicago before the federal commission in the Illinois Shreveport case, no other evidence of discrimination was offered by the carriers than that the Illinois commission had allowed a less percentage of increase than the federal commission. The carriers have chosen to rest upon the proposition that whatever action the federal commission takes as to interstate rates must be also taken by every state as to intrastate rates, without consideration of the question of the reasonableness of the same as to state traffic, and even though it may be destructive of such traffic.

"Upon this proposition it was the unanimous opinion of the conference that we have no alternative but to fight. If the Transpartation Act is correctly interpreted, it does not strip the state commissions of all power over state rates, but carefully preserves the same. We owe it to the people of our respective states to defend our proper powers against destruction by any such misconstruction of the Transportation Act as carriers are now attempting to secure. We should do this first before the federal commission, and then in court if need be.

"In this action it was felt that the state commissions should stand united, regardless of the action they have taken upon the recent applications of carriers for rate advances. The question is not whether advances ought now to be allowed, or whether rates fixed by statutes or otherwise by state authority ought not to be changed if shown to be discriminatory within the proper meaning of section 13 of the Interstate Commerce Act as amended, but it is whether such an interpretation ought now to be given to that section as will take away from the state commissions any effective power whatever over state rates. If it be established that any variation is a discrimination, then so far as rates are concerned, it is obvious that the state commissions have no vestige of power left.

"Acting under the authority contained in the vote whereunder we were appointed, it is our intention to appear before the Interstate Commerce Commission in the pending Shreveport cases, and argue for a construction of the Act in conformity with its plain meaning, and in conformity with prior decisions of the United States Supreme Court. We are also instructed to file a brief upon the legal questions involved. We desire to do this in the name of all commissions that approve such action. Will you please advise us, directing your reply to the office of our association in Washington, as to the attitude of your commission? In the preparation of this brief we shall be glad to have the aid of such assistance or suggestions as the legal representative of your commission may be prepared to give."

The Interstate Commerce Commission has announced that oral arguments in the New York case, which was heard before Chief Examiner La Roe on September 13, will be heard before the commission at Washington on October 11. The commission has also announced a hearing before Examiner Flynn on October 4 at St. Paul, on petition of the railroads because of an order of the Minnesota Railroad and Warehouse Commission denying the request for permission to make increases for intrastate traffic similar to those permitted by the federal commission for interstate traffic; and a similar hearing on Wisconsin passenger fares will be held on September 27 before Examiner Healy at Madison, Wis. Examiner Flynn will also hold a hearing in the Iowa case at Des Moines on October 8. Oral arguments in the Illinois case will be heard before the commission at Washington, on October 11.

* An abstract of Mr. Parck's report of these investigations appeared in the *Railway Age* for August 27, 1920, page 359.

John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners has issued the following supplemental bulletin regarding the status of advanced rate proceedings in the various States:

Arkansas. On August 20 the commission authorized a 35 per cent increase, corresponding to the increase allowed by the I. C. C., in all intrastate freight rates, except carload rates on sand, gravel and crushed stone for roadbuilding purposes.

On September 8 the commission denied carriers' application for authority to increase passenger and excess baggage rates, for lack of jurisdiction. Passenger rates are fixed at 3 cents per mile by statute in Arkansas, and baggage rates are also fixed by statute. The 50 per cent surcharge on Pullman rates was allowed, and also the 20 per cent increase in rates on milk and cream moved on passenger trains. On September 7 the commission granted the American Railway Express Company's petition for authority to increase its rates 12½ per cent, as allowed by the I. C. C.

Colorado. On August 25 the commission authorized increases in freight and passenger rates conforming to the increases allowed by the I. C. C., except that no increase was allowed in rates on milk and cream on passenger trains. The commission's report accompanying its order contained the following paragraph: "Owing to the incompleteness of the record in this proceeding as to the percentage of revenues required by applicants properly assignable to intrastate traffic in Colorado, the finding as to increases hereinafter allowed must be understood to have been made upon authority and weight of the evidence presented to the I. C. C., as applied to the respective groups, and the applicants and the public will understand that such increases are authorized temporarily and may be made subject to readjustment or modification at any time application is made in that behalf, and that upon such application being made the carrier or carriers will be required to justify such increase." Upon a separate application the Denver & Salt Lake was permitted to increase its freight rates 35 per cent in Mountain-Pacific territory, instead of the 25 per cent allowed on interstate traffic, and an additional 1⅔ per cent on joint rates on state traffic, and an additional 1⅔ per cent to accrue wholly to the Denver & Salt Lake.

Connecticut. Under the laws of Connecticut steam railroad carriers were not required to obtain approval of recent increases in rates. Increases in passenger and freight rates on intrastate traffic were accordingly put into effect without action by the commission, but are subject to review by the commission on petition of aggrieved patrons. No complaints or protests against the increased rates have thus far been presented to the commission.

Kentucky. The Kentucky commission has no power to suspend rates, and may only pass on any rate upon complaint of a shipper that the same is extortionate and excessive. Accordingly the commission did not exercise jurisdiction in the matter of recent increases in freight and passenger rates. This was upon the authority of Siler v. Railroad, 213 U. S., 175.

However, the commission has taken the position that rates heretofore fixed by the commission remain effective until changed by the commission. Accordingly it holds an increase in the Louisville interurban passenger rates from 2½ cents to 3 cents per mile, without application to the commission for authority, illegal, and has directed the commonwealth attorneys in districts through which the lines of the company run to secure indictments of the company, and has also instructed the attorney general to restrain by injunctive process the further charging of the increased rate until the same has been authorized by the commission. Upon the application of the American Railway Express Company for leave to file tariffs advancing express rates on less than statutory notice, the commission held that "the commission had no jurisdiction upon the blanket application to determine whether such rates are reasonable."

Louisiana. The Commission, on September 16, authorized a general advance in freight rates on October 1, equal to the interstate advance, but with numerous exceptions, and denied the carriers' application as to passenger fares. Gravel and other road material must not be advanced; cotton rates are conditional on a concession as to compressing; on rice, sugar cane and milk the case is held open; on excess baggage the increase is allowed. The whole case is held open for any and all complaints.

Montana. On August 31 the commission entered an order denying carriers' proposed increase in passenger rates, upon the ground that passenger rates in Montana are limited to 3 cents per mile by statute. Excess baggage rates, newspaper handling charges, milk and cream rates on passenger trains, and charges for parking special baggage cars, and for movement of special passenger and baggage cars and special trains were denied for lack of evidence to sustain the proposed increase, but without prejudice to the renewal of carriers' application. The proposed surcharge on sleeping, parlor and observation car rates was denied on its merits. In its report concerning this proposed increase, the commission said in part: "We decide against this increase on the merits.

To us it seems subversive of the fundamentals of sound rate-making, and we are at a loss to understand why the Interstate Commerce Commission ever approved the invention. * * * The passenger who travels in a car other than furnished by the Pullman Company, has a single relation, i. e., with the railway company, with the corporation agreeing to transport him. The Pullman car passenger has two relations, one with the railway corporation concerning transportation, and one with the Pullman Company, concerning quarters and personal attention. Whatever the relation between the Pullman Company and the railway company, *inter se*, it does not diminish the duty each owes to the public, nor does it blend their services. And while the ownership of the special service cars may be a matter of indifference to the traveler, as long as the service may be had, it cannot be said that he is indifferent to paying unreasonable rates for either service, no matter who owns the cars. The traveler's obligation is to pay to the Pullman Company a rate that will provide its costs of operation and a reasonable return on the property it devotes to its particular service, and likewise to pay to the railway company a similar rate for the service furnished. But he is not obliged to pay any more. * * * The Pullman Company asks for no increase; on the other hand, it resists the imposed charge. * * * The traveler is paying for a service already fully compensated. * * * The surcharge is nothing more or less, than a tax. As such, the federal government had power to levy it during federal control, but no government now, state or federal, can levy it for the corporate treasuries of the carriers' stockholders. Needed revenues must be raised by constitutional process. The 14th amendment protects the public from confiscation as well as the carriers."

Nevada. The application of the American Railway Express Company for authority to increase its rates on intrastate traffic was heard September 3. No decision has yet been rendered.

South Dakota. The hearing ordered for September 10, to fix intrastate rates on a substantial parity with interstate rates on commodities excepted from the increase allowed August 19, has been postponed until September 22.

West Virginia. The commission has disposed of carriers' application for an increase in freight rates. As stated in my bulletin of August 14, however, West Virginia has a 2-cent fare law, and its effect after September 1 is under consideration. As to passenger rates, Pullman charges, excess baggage and milk rates, the Commission will require each carrier to present data from its traffic records to support its claim that an increase is needed. The next hearing will be held on September 28. The three-cent fares continue in effect for the present. Reference to the action of the West Virginia commission in bulletins subsequent to August 14 should have been restricted to freight rates.

Shreveport cases are commonly understood to have been instituted by carriers before the I. C. C. against the following states: Illinois, Iowa, Michigan, Minnesota, Nebraska, New York, South Carolina, Texas and Wisconsin. Petitions to the I. C. C. are not treated as public when filed, but only after they have been set for hearing and docketed.

Intensive Methods of Speeding Up Operations

New York Railroad Club Meeting Discusses Program for Increased Car Efficiency

THE MEETING of the New York Railroad Club in New York on September 17 was devoted to a consideration of the best methods of bringing about the improvement in railway service called for by the program adopted by the Association of Railway Executives at its meeting in New York on July 16. There were five speakers. Each of the first four discussed one of the respective standards in the program. The fifth speaker, Dexter C. Buell, director of the Railway Educational Bureau, discussed the relation of the program to the public and the employees.

Thirty Miles Per Car Per Day

"There should be an average daily minimum movement of freight cars of not less than 30 miles per day." This part of the program to improve railroad operation was discussed by A. J. Miller, chairman of the New York Committee on Car Service. Mr. Miller considered the subject under 12 heads, as follows:

First: Co-operation of the shipping public is necessary. The railroads cannot function 100 per cent without the co-operation of the consignors and consignees. We can get this co-operation in nine cases out of ten if we ask for it in the proper manner.

Second: Build up solid trains for one destination. This method of handling will stimulate the average miles per day materially and I am satisfied that many more solid trains can be made by carefully analyzing the freight for movement at originating points.

Third: Avoid accumulation by the use of embargoes and the permit system. This can be avoided in many instances by keeping a close check on the business for principal stations and terminals and by taking prompt action when traffic arrives faster than it can be absorbed. We have found the permit system very effective in avoiding accumulation of export freight; also lumber, hay, cement and other commodities.

Fourth: Cars without waybills are frequently seriously delayed and these delays have an adverse effect on the average miles per car per day. This is a railroad disability which can be avoided if conductors are made to understand that they cannot handle cars in road haul movement without waybills.

Fifth: Improper and illegible billing as well as failure to show final destination on waybills results in delays to equipment. The remedy in this case is to refuse to accept from connections cars billed in this manner.

Sixth: Cars loaded with railroad company material, including fuel coal, are sometimes delayed more seriously than cars loaded with commercial business. These delays can be avoided or materially reduced by providing facilities for storing fuel coal that is now held in cars and by making the station agent responsible for failure to unload other company material promptly.

Seventh: Idle freight cars will retard progress and nothing should be left undone to keep all freight equipment working. Refrigerator cars when not needed for freight requiring refrigeration should be used for other loading. Ice cars can be dried out and used for loading merchandise, produce, etc., and stock cars can be used for handling rough freight.

Eighth: Distribute empty cars economically. Provide adequate help for this very important work and insist on reliable reports and records.

Ninth: Move empty cars promptly from terminal, team tracks, private sidings, etc. Where possible, arrangements should be made to move at night the cars that are unloaded during the day to points where they can be loaded the following day.

Tenth: Get the habit of breaking records. Some very good results have been secured by ascertaining what the average unloading of cars has been at certain stations and urging the agents and all concerned to exceed the past performances. At one station the average unloading was increased in this manner from 125 cars to 165 cars per day.

Eleventh: Send freight not accepted promptly to public warehouse. Gratifying results have been obtained by handling shipments in this manner and our observations have been that in most cases it was not necessary to send more than one or two shipments to the warehouse for the same consignee. This method of handling makes it expensive for the owner of the freight and usually results in arrangements being made for prompt acceptance of future shipments.

Twelfth: Constant checking is necessary to keep freight cars moving. On hand reports from each station should be checked daily and the delayed cars followed up for release and movement. If conductors' wheel reports are properly checked they will often reveal cases of gross movement of empty cars, etc. By checking loading reports it will sometimes develop that two cars were used where one would have sufficed. Check yards for cars without billing. Check bill racks for delayed cars. Check tonnage reports for light trains. Check station reports to ascertain if agents are ordering empty cars for loading when loaded cars on hand can be made empty and applied on orders. Check loading by industries to develop if freight is being sent to transfers when sufficient tonnage could be assembled for through cars.

The latest mileage figures available show that good progress has been made on a number of the railroads. Some of the increases of July, 1920, compared with July, 1919, are:

July, 1920	July, 1919	July, 1920	July, 1919
37.2	29	44.6	24.9
24.9	19.1	32.8	21.5
42.4	39.8	44.2	34.1
28.9	22.6	63.6	54.8
41.5	31.1	32	27.7
47.1	33.8	32	27.9
47.4	36.9	44.9	27.9

Thirty Tons Per Car

"Freight cars should be loaded to an average of not less than 30 tons per car." This standard was discussed by J. W. Meredith, general superintendent of the Central of New Jersey. Mr. Meredith said in part:

Frankly, I have nothing startling to suggest that will revolutionize car loading or enable us, in a bound, to have each car loaded to its capacity. This does not mean that I am doubtful about the railroads' ability to achieve the goal of 30 tons per car. On the contrary, I think it can be done, but I believe we will arrive at it by more intense application of the now current practice rather than by revolutionary or visionary changes of method.

I was much surprised a short time ago to receive a coal tariff in which the minima was placed at 15 gross tons. Upon inquiry I learned that the minima for many other commodities was also ridiculously low—for example, cement 50,000 lb., sugar 40,000 lb., pig iron 50,000 lb., scrap iron 36,000 lb., ore 50,000 lb., crushed stone 40,000 lb. I can see no good reason why cars carrying these commodities should not be loaded to full capacity, axle or cubic as the case may be.

I am aware that trade customs enter here but we can do

much, by moral suasion, to persuade shippers to load heavily. This should be supplemented by another revision of the minima provided in tariffs which should be raised to a point as high as practical conditions permit.

As to less carload traffic, we can increase the loading in some directions, but I do not believe it practicable to do so to the same extent as in carloads, and I am not in favor of loading cars with miscellaneous merchandise so heavily as to seriously damage the lading. This has been done many times in the past and where we saved at the spigot we lost at the bung.

Again, there is no ultimate economy in loading peddle cars so heavily that way freight crews are grossly delayed in sorting out and delivering the freight.

Conversely, at large stations and transfers where cars to direct destinations are made and sufficient space is available to load the light and fragile packages on top, the car can usually be loaded to its cubic capacity. This is a fertile field for securing heavier l. c. l. loading.

Another step in the right direction is to watch carefully the assigned cars at transfers and large freight stations. When assigned cars are authorized there is, of course, sufficient traffic to warrant them, but the volume varies with the changed conditions and seasons and it frequently happens that a check shows a number of these assigned cars running too light. The assignment should be checked up frequently and light cars cut out by doubling up with other cars or holding freight over and making a straight car every other day.

In addition to the efforts of our trainmasters, yardmasters, agents, we employ six traveling men who report to the car service department; we keep them on the road practically all the time. One of their major duties is to secure heavier loading of cars. They visit shippers, consignees, foremen, agents, station employees, way freight conductors, talk heavier loading to each and all, pointing out the urgent need of getting maximum transportation. In many cases, following a visit of one of our men to a heavy shipper, we have checked up his loading and almost invariably found it increased. While it is not possible to measure the actual increase accomplished by this method, there is no question in my mind but what the results have been very material.

I do not believe that radical changes in our practice are necessary to accomplish what we are after. What is needed is to keep eternally after the question of heavier car loading and with everybody who has to do therewith. We must keep up the agitation, keep up the interest in the work, teach and preach car loading to the shipper, to the agent, to the consignee; even the way freight conductors can help out and save a car here and there, which automatically increases car loading. Our agents can accomplish a great deal, but the character of their duties and their relations with the shippers are such that their efforts are not all-sufficient. We should supplement them by special men who specialize on this particular feature. Our traffic people should become imbued with the thought of getting heavy carloads and forget if they can the pleadings of the shipper which have in the past so often resulted in establishing bad practices, amongst the worst of which is their unwarrantably low tariff minima. It is along these lines that we will raise the average carload, not to 30 tons but to well above 30 tons, if we eternally keep after it.

Bad Order Cars Should Be Reduced to Four Per Cent

This subject was assigned to J. C. Fritts, master car builder, Delaware, Lackawanna & Western, who outlined the difficulties that are being encountered and made the following suggestions which he believed would relieve the situation:

First: During the last two and a half to three years the number of cars retired from service or dismantled has been very much less as compared with the practice of former years, and as a result we now have a large number of cars operating in interchange or revenue service that are either too light, or worn out, or both. These cars should, as far as the requirements demand, be assigned to special home line service and any that cannot be utilized in this manner should be dismantled. The salvage value can then be used in connection with the purchase of new equipment. This light-constructed or wornout equipment does not only fail frequently in itself, but very often causes heavy damage to other good cars that are being handled in connection with it at the time failures occur.

Second: Formerly the majority of freight cars were on the owner's rails. This condition began to change during the early part of 1918, and by July of that year cars on owner's lines had been reduced to about 12 to 15 per cent, and in spite of all efforts that have been made to return cars home, 20 per cent is a very conservative average of cars on home rails at the present time. The effect of such a condition is that very little material standard to the car outside of couplers, wheels, axles and a few M. C. B. parts can be used, and this has resulted in a large amount of temporary repair or patchwork being done in order to keep cars in service. I would offer as a relief to this problem, returning cars to owners, where standard material and reinforcements can be applied. Unless these cars can be moved to the owners and proper reinforcements applied, I am of the opinion that the General Committee of the Mechanical Section of the A. R. A. should appoint a committee to investigate and work out certain standards that may be used to repair and strengthen these cars. These standard parts should be available in all of the larger car shops throughout the country; and when cars of weak construction come in for repairs, they should be applied in lieu of repairing them in kind.

Third: In the fall of 1918, piecework was abolished generally throughout the country in railroad shops and standard rates of pay for all employees for the various crafts adopted. In the equalization of rates, the benefits derived from the incentive of the individual to increase his income (and at the same time the output) by his own efforts was lost, and the most competent mechanic today feels that he should not turn out more work than one of lesser skill because he is receiving the same rate of pay. I believe a piecework schedule that is eminently fair to the employees and railroad company should be worked out and inaugurated, as the principles surrounding the piecework system are the same as the rights that every citizen of the country demands; i. e., that he should be given equal opportunity to advance on his individual efforts. This feature alone would increase the shop output at least 30 per cent, which in my opinion is a very conservative figure.

Fourth: Inspection of cars sent to shops for repairs indicates that a great many are being damaged at loading and unloading points on acount of improper handling. Side doors, tracks, and parts of roofs are torn off by bars or derrick blocks; lining is being removed and floors broken; crossties removed and torn out by clamshell unloaders and not replaced, and in many instances cars are cornered by another car in order to move them in to clear the adjoining track. The majority of this damage could be avoided if the importance of maintaining cars in service was realized and proper supervision maintained at the various unloading points. This would result in keeping thousands of cars away from the shops and repair tracks that are now in bad order; this would assist in increasing the car-mileage, as well as reducing the total number of cars in bad order.

Fifth: Due to labor troubles and the great demand for manufactured products of all kinds, railroad shops have experienced difficulty in maintaining on hand sufficient material to meet the demands; in fact, there has been a general shortage. Manufacturers have been unable to fill all of the orders placed with them, and those they have filled have been retarded by embargoes and slow movement in and around

terminals and interchange points. I believe that all embargoes placed on shipments of material for repair to rolling stock should be lifted and special efforts made to forward it to destination, as the question of material for repairs to cars is almost as important as fuel for locomotives.

Reduction of Locomotives Unfit for Service

"There should be an early and substantial reduction in the number of locomotives now unfit for service." This standard was discussed by F. H. Hardin, chief engineer of motive power and rolling stock of the New York Central. Mr. Hardin outlined briefly the motive power situation as it exists today and spoke in regard to the general policy that should be adhered to towards restoring the condition of locomotives to a point where they would be capable of meeting the demands of traffic. He referred to the fact that there are at present less than 1,000 stored locomotives in the country as serious. Normally, it is customary to repair large numbers of locomotives during the summer months and to store these locomotives as a reserve available during the severe winter months. It is obvious that, with no greater reserve than is indicated by these figures, the railroads are not as well equipped for the coming winter as they should be.

Increased serviceability for locomotives now in service will, Mr. Hardin believes, do more than anything else to help the present situation. If the work accomplished by each locomotive can be increased, this will accomplish more than placing additional locomotives in service. Mr. Hardin believes that an increase in the ton-miles per hour will further improve the motive power situation.

As a practical means for increasing the work accomplished by each locomotive, Mr. Hardin suggested the advisability of operating all freight as well as passenger trains on scheduled speed. That is, there should be a time interval schedule prepared for every freight train and the delays reported should be carefully checked. As a further means for improving the performance of locomotives, it was stated that elimination of terminal delays by speeding up terminal operation would accomplish more than any other factor towards increasing the availability of locomotives for active service.

With reference to locomotive repairs, Mr. Hardin stated that shop repairs should be 100 per cent, even at the expense of output. Thorough work in the back shop will reduce locomotive failures and it is of the utmost importance that these be reduced to a minimum. Where it is impossible to turn out 100 per cent work in sufficient quantity, the railroad should arrange to have repairs to locomotives made in outside shops.

Competent inspection at terminals is highly essential to maintaining power in suitable condition for service. It is also necessary that supervision in the terminal be ample to insure the work reported on incoming locomotives being properly attended to. The organization for each terminal should be studied and adjusted to the requirements of the individual terminal. Foremen should not only have the capacity to arrange their organization to the best advantage but should have the ability to study the men under their direction with a view to developing in these men ability for more important positions. Foremen should endeavor to train their subordinates so that they will be able to take their places whenever the occasion may arise.

Mr. Hardin spoke of the necessity of educating locomotive engineers to submit intelligent work reports that would indicate the most important things requiring attention about the locomotive. Many enginemen, he said, were extremely careless in this particular and often reported trivial matters in place of serious defects. It is not unusual for a locomotive to be reported as not steaming when the real defect lies in broken cylinder packing.

The segregation of power by classes on divisions was referred to as one of the best means of getting improved service out of the locomotives. As stated by Mr. Hardin, this would enable each division to deal with a uniform class of power and simplify the work of maintaining these locomotives at terminals. There would be a very great advantage in the matter of despatching freight trains and securing maximum tonnage loading if all the locomotives on each division were of the same class.

"The public is now solidly with us," said Dexter C. Buell, director of the Railway Educational Bureau. "It is not criticizing as it did in the past, but it is now, instead, making excuses for us." Further than that, he continued, the press is behind the railways and what the railways accomplish in improving service or the records they make is good news. There is also a good opportunty to get the employees interested.

The items in the local papers will incur their incentive, and it is a fact that because of recent developments they are willing to know more about railway operations. This is not necessarily due, Mr. Buell said, to a desire to become more efficient, nor is it necessarily a resurrection of loyalty. It represents, rather, a result of the Plumb plan agitation. Nevertheless, there is a better opportunity than ever to get new ideas before the men and there is a good chance to get back the old morale.

Colonel Charles Hine, now on the staff of the Erie, was one of those who discussed the papers. He questioned the value of loading trains solid to destination and said that probably more was lost than gained by this practice. He added, one of the biggest handicaps was the fact that only 10 per cent of the freight yards were properly laid out. He agreed with Mr. Hardin's view that scheduling freight trains would help considerably in improving operation.

C. & N. W. Reconsignment and Tracing Bureau

IN ORDER TO INCREASE the efficiency of transportation to better meet the demands of the public and to give the traffic department current knowledge of traffic movements over the Chicago & North Western, a bureau for the handling of freight reconsignment, diversion, tracing and passing records has been established in the general freight department. The bureau is a distinct organization fully equipped to function under the direct jurisdiction of S. F. Miller, general freight agent.

Heretofore, these matters have been handled in several departments, particularly under the jurisdiction of the freight claim agent and of the superintendent of car service. But as the proper handling of most of the subjects, particularly diversions and reconsignment, must be with the knowledge of freight tariff provisions, more expeditious and proper handling is possible when under the jurisdiction of the department having the construction and issuance of tariffs, to which reference must be made. Under federal control, this class of work was discontinued to a considerable extent and it is believed that this has tended to restrict somewhat the many requests formerly made by shippers, who did not necessarily require information as to movements of cars so long as they reached destination within a reasonable time. It is believed that in future requests from shippers for tracing and passing records will be confined more to the actual necessities of the case, hence the requests received should be given prompt and careful attention. This bureau is organized to execute promptly reconsigning or diversion instructions covering movement of traffic enroute, particularly carload shipments, to advise the interested parties so that they may know the diversion has been accomplished and to get the traffic to the new destination or consignee as expeditiously as possible, so that it may be anticipated and promptly accepted, with early release of equipment.

Consignees are frequently disappointed by manufacturers

or jobbers, who are unable to make shipment as soon as expected, and there are cases where construction material enroute may be the cause of delay or suspension of work at destination. This makes information as to the movement enroute and anticipated delivery of such traffic most valuable. The purpose of this bureau is to locate and assist in seeing that cars move on schedule. If a shipment is delayed on account of equipment getting in bad order the bureau will see that it is returned to schedule movement with as little delay as possible.

Passing reports of time freight, which may be enroute from coast to coast, if furnished to representatives of the company located at the point of origin or destination and to connecting lines, enables inquiries to be answered so that the interested parties may be prepared for prospective arrival or delivery. Such inquiries regarding the movement of long haul traffic are particularly frequent.

It is the general rule for patrons to communicate with the traffic department on matters of all kinds, leaving it to this department to see that their inquiries or complaints reach the proper department. This bureau is expected to further that contact and to result in better understanding with the shippers, who will thus be enabled to get satisfaction direct from the traffic department. The work outlined will in no way conflict with the car service department in the equalization and distribution of equipment, or with the car accountant, with reference to records of car movements.

Administration of Loan Fund Complicated

WASHINGTON, D. C.

THE SLOW PROCESS of obtaining loans from the $300,000,000 fund provided by the transportation act "for the purpose of enabling carriers properly to serve the public during the transition period immediately following the period of federal control," has encountered further complications to cause delay in a difficulty as to the interpretation of the words in the law requiring the Interstate Commerce Commission to certify to the Secretary of the Treasury "that the applicant, in the opinion of the commission, is unable to provide itself with the funds necessary for the aforesaid purposes from other sources." The commission has issued several certificates signifying its approval of loans to various carriers, including the Illinois Central, Chicago, Burlington & Quincy, Atchison, Topeka & Santa Fe, Great Northern, Ann Arbor, Delaware & Hudson, and Chicago Great Western, the certificates including a statement such as is required by the law, with the addition of the words "except at excessive rates of interest." The Treasury Department officials have returned the certificates as not being in the proper form and have held up the loans on the ground that to say that a road cannot borrow from other sources than the government at reasonable rates of interest is not a certification that it is impossible for it to borrow at all.

There is no controversy between the commission and the Treasury Department on this point and the commission has readily conceded the correctness of the department's view that it must furnish an unqualified certificate, but a previous clause in the same sentence of the law requires it also to certify "that the prospective earning power of the applicant, together with the character and value of the security offered, furnish, in the opinion of the commission, reasonable assurance of the applicant's ability to repay the loan within the time fixed therefor and reasonable protection to the United States."

The commission is reluctant to say that a company that complies with these requirements cannot borrow money from other sources, without some such qualification as it had inserted with reference to the rate of interest, actuated by a belief that Congress had intended to loan money under the terms of the law, had endeavored to give it a practical construction by inserting the qualification. In the case of the Great Northern it has since issued a "clean" or unqualified certificate and the company has got its money, but before proceeding further the commission is seeking further advice.

It therefore announced a hearing before Division 4 at Washington on September 23 on the question of the interpretation and construction of Paragraphs a, b and c of Section 10 of the transportation act as amended by Section 5 of the sundry civil appropriation act of June 5, and particularly the concluding clause in paragraph b, as thus amended, "and that applicant, in the opinion of the commission, is unable to provide itself with the funds * * * from other sources." Notice of the hearing was served upon the railroads mentioned, upon such other carriers or persons as appeared at the hearings heretofore had on the general question of loans from the revolving fund, and upon the Association of Railway Executives, the American Short Line Railroad Association and the Secretary of the Treasury. The Commission has thus far announced its certification of only about $60,000,000 of loans from the $300,000,000 fund and it now appears that some of the most important of the loans which the commission has approved have been held up in the Treasury Department. Most of the delay thus far experienced in the administration of the fund has been caused by the necessity of formulating some plan for apportioning the fund among the various roads and for various purposes. Further delays were caused by the desire of the commission to make the available sum go as far as possible by requiring various roads which were to receive assistance from the fund to finance a part of their requirements from other sources, and its certifications were made contingent upon the various carriers complying with such requirements. In many cases the commission has also imposed a requirement that the additional money thus raised should be procured at not to exceed a specified rate of interest.

The process of collecting the six-months' guaranty provided by the transportation act is also not without its complications and it now appears that a large part of the money will not be released from the treasury in time to accomplish much toward the purpose for which it was intended. The Interstate Commerce Commission had issued certificates up to September 1 for some $234,000,000 of advances on account of the guaranty, which has been roughly estimated at about $600,000,000, but it could not give certificates for amounts in excess of what it was perfectly safe to assume the railroads were entitled to and the exact determination of the amounts due is likely to be a long and tedious process. Officials of the Interstate Commerce Commission had suggested a plan by which partial payments on account might be made, after the period within which advances as authorized by the law might be made had expired on September 1, with the idea that the final payments might be gradually anticipated as the railroads had urgent need of the cash. The Treasury Department, however, is inclined to be technical and to take the position that the law did not contemplate any advances under any name after September 1 and that no more money can be paid out until the final settlement is reached. The final settlement involves many complicated questions of adjustment and also the big question as to how much the commission may allow for maintenance, which involves a determination of the main question between the railroads and the Railroad Administration as to the interpretation of the standard contract provisions as to the government's obligation to maintain the roads. As the commission was not operating the roads, however, it is not interested to the same extent that the Railroad Administration is, and it is possible that if the roads get their claims in early enough it may be able to settle the point in less time than will be required for the negotiations with the director general.

Painters Hold an Unusual Convention in Boston

Addressed by Charter Member Who Helped to Organize the Association in Boston Fifty Years Ago

On September 14, the former Master Car and Locomotive Painters' Association met for the first time under the auspices of the American Railroad Association as the Equipment Painting Division of Section III, Mechanical. While it was natural that some regret was to be expressed over the lost individual identity of the old association, this was more than compensated for in the broader scope attained in the work and the more definite objective demonstrated through affiliation with the American Railroad Association.

While much depends upon the leadership of the presiding officers that are annually elected to associations of this character, the real burden and responsibility for the continuance of a fixed policy usually falls upon the secretary, who holds office over a tenure of years. The painters are fortunate through their affiliation with the American Railroad Association in securing the services of V. R. Hawthorne, who deserves much of the credit for the excellent work accomplished at the meeting, particularly for the framing of the resolutions adopted at the close of the convention expressing the attitude of the association toward the many important matters which were the subject of committee reports and much discussion.

The attendance was not large, probably due to the fact that a more central point was not chosen for the meeting. The selection of Cleveland for the next convention was doubtless made in consideration of this fact, and the choice of a centrally located point may be commended to other railroad associations for the same reason. Despite the fact that there were seldom over 100 members participating in the meetings, the discussions following most of the papers were excellent and served to add much to the information contained in the reports submitted by the committees.

An Eventful Meeting

It is probable that in selecting Boston for this convention the association had in mind the fact that it organized in that city just 50 years ago. Associations specializing on certain phases of railroad work and devoted to promoting improved methods in their special lines have played a very important part in the development of American railroads, and of these associations the Master Car and Locomotive Painters' has one of the longest records of useful service. The painting of railroad cars was a very different proposition in 1870 from what it is today, but the work of this convention proves that the association is still taking the lead in recommending economical and otherwise satisfactory equipment painting methods.

The most interesting event that occurred during the convention was the address of Warner Bailey of the Boston & Maine. Mr. Bailey took a prominent part in the organization of the association in 1870, and is still actively interested in the work of the association, although he is now over 80 years old.

Warner Bailey's Address

The following extracts from Mr. Bailey's address at the opening of the convention disclose an interesting chapter in the history of the association and define in simple terms a splendid standard for railroad association work:

"In the summer of 1870, Hill of the Portland & Kennebec Railroad; Cox of the Eastern Railroad; Scott of the Boston & Lowell; Lunt of the Fitchburg; Platt of the Old Colony; Ford of the Boston & Worcester; and Bailey of the Boston & Maine, met together by previous arrangement and talked over the question of forming this association. I was chosen for the task of addressing a circular letter to be sent to foremen painters and the only guide I had was 'Poor's Railroad Manual.' In most cases only the president's and superintendent's names were there given and the call was sent to them with a request that it be handed to their foreman painter. On November 6, 1870, when the meeting was called, 16 members responded. Hill of Augusta was made chairman of the meeting. After appointing a committee to draw up a constitution and by-laws and selecting a few subjects to be discussed at our next meeting we adjourned to meet in New York City the following year.

"For many years we as an association struggled along without much increase in numbers, and little encouragement from any source, until we added to our numbers by taking in foremen locomotive painters and foremen of car manufacturing shops, both steam and street car. Also Canada was admitted with this addition, and today we number about 300 members.

"We have always kept in mind the object of this association, as stated in the circular letter issued for the first meeting; and that was to perfect ourselves in our trade, that we might be of more benefit to corporations employing us."

"What is the prospect for our association? I can safely say that this association will keep on indefinitely in its career of usefulness if the same principlse actuate you as moved the founders of it; and this was to perfect themselves in their trade. If you know it all, then there is nothing for you to do but quit these assemblies, unless you come together wholly for a good time; and in this you might well consider whether or not it might better be spent in other ways and places. We do not know it all yet. New kinds of equipment and new ways of doing things are constantly developing and you will always want to keep these meetings going to discuss them.

"A year ago you dropped your name and entered the American Railroad Association as a unit in that great and useful organization. Let us hope this will widen the scope of your usefulness as doubtless it will."

Endorses Uniform Stencilling

Foremost among the subjects considered at the convention was the question of uniform stencilling for freight cars. The committee assigned to this subject submitted a very thorough report including exhibits designed to show the expense of carrying the large variety of stencils as required at present. It was ascertained that many of the members represented railroads that were already using the uniform stencilling in accordance with the recommendations of the American Railroad Association and the following important resolution was adopted in favor of uniform stencilling:

"Whereas a large proportion of freight equipment cars in service bear markings not conforming to the American Railroad Association recommended standards as shown on drawings 26, 26-a and 27, thereby making necessary the use of an endless variety of sizes and types of letters and figures; And whereas the condition greatly increases the cost of repairs to foreign line cars, due to the necessity of applying markings by hand, or the making of numerous stencils for temporary use; And whereas the condition is frequently the cause of wrong numbers being recorded by transportation department employees, causing confusion and needless correspondence; Be it therefore resolved that *this division recommends any action necessary to urge all railroads to follow a uniform*

practice and use markings as recommended by the American Railroad Association, also that a rule be adopted making it permissible to use such markings, disregarding the manner in which the cars were previously stenciled, and making all marks of an advertising character billable against the owners."

Favors Use of the Best Materials

The Committee on Tests submitted several individual reports dealing with linseed oil and the use of substitutes, but which did not disclose any very new or original data relating to the subject. The desirability of finding a substitute for linseed oil at its present price was admitted, but on the other hand the inadvisability of using other than the very best materials with the prevailing high labor costs was emphasized.

In this connection the following is taken from a paper submitted by B. E. Miller (D. L. & W.) as typical of the attitude of this association toward the purchase of painting materials on the basis of quality rather than price.

"Use only good, serviceable materials. As a rule, it doesn't pay to bother with anything else. The present high cost of labor and the difficulty of securing it, demand that money shall not be thrown away, partly at least, in the direction of applying paints and other materials which lack efficiency and durability. It requires no mathematician to figure out that as a rule, the higher priced material proves itself to be the cheapest in the end. This has been said so often and evidently with so little effect, that we almost hesitate to repeat it.

"Purchasing agents, unless strong pressure is brought to bear, are inclined to invite ruinous competition when placing orders for supplies. In the matter of paints, as with other materials, they are apt to purchase solely on price, unless they can be successfully convinced that in some cases at least, it is rank folly to do so. Happy indeed ought the painter to be, whose complaints when made to the proper official, receive the attention they merit and eventually reach the person responsible for the placing of orders. His duty and aim is to save money. If he can be thoroughly convinced that paying more for material means in the end true economy, he will often be persuaded to buy the higher priced goods."

Other Work of the Association

Among the other reports admitted at the convention which came in for considerable discusion were: Committee on Classification of Painting, Repairs and Shopping of Equipment; Committee on Shop Construction and Equipment; Committee on Safety and Sanitation, and Committee on Maintenance and Care of Paint and Varnish at Terminals.

In connection with the last mentioned report, Mr. Hammond of the Soo Line, explained his method of painting steel passenger cars wherein a single application of paint followed by three coats of varnish produced a satisfactory surface at reduced cost. Other speakers questioned the desirability of this method in mountainous sections of the country where tunnels were frequent or in a desert section where alkaline dust was encountered.

The convention adjourned after electing the following officers for the ensuing year: B. L. Younger, Missouri Pacific, chairman; J. G. Keil, N. Y. C., first vice-chairman, and J. R. Ayers, Canadian Pacific, second vice-chairman.

THE SUPREME COURT of the District of Columbia has refused the request of the Interstate Commerce Commission to dismiss the suit filed last May by the Western Union Telegraph Company asking for a mandamus to compel the commission to value the telegraph lines along the rights of way of the railroads as the property of the telegraph company. The commission is allowed 30 days to answer the petition for mandamus.

Railway Business Association Meeting

THE QUARTERLY MEETING of the Railway Business Association was held at Chicago on September 14. The meeting discussed the policies to be carried out by the association and the reports were submitted which will be sent out later to the members. One of the important decisions made was to move the offices of the association from New York to Philadelphia.

Report on Adequate Facilities

Knox Taylor, chairman of the Committee on Adequate Facilities, presented a report suggesting that the time has come to "seek among ourselves an outline of objects toward which our work should be aimed on the long view," and that there are certain conceptions "which we believe the whole public must understand and accept if the railways are to be assured a successful future." The conceptions suggested are these:

"1. Heavy investment in additions and betterments, with rates temporarily even higher than now, may be the only means of getting ultimately to a lower rate level or even avoiding in the future a chronic condition of indefinitely rising rates.

"2. Great need for investment in railway stocks, which should in the aggregate amount to at least half of the total railway capitalization.

"3. Citizens in the communities have a facilities stake, in addition to any investment stake, in buying securities of their railroads.

"4. Citizens will most fully benefit from the lessons of current car shortage if they provide effective means of insuring that their enterprises and agencies automatically and continuously perform the citizen's part."

The report concludes: "On these several conceptions your committee on adequate facilities hopes to arrange in due course for making available to our members the views of authorities specially qualified to aid the members of our association in reaching sound conclusions."

Report on Equipment Policies

E. B. Leigh, chairman of the committee on equipment policies, presented a report which will also be sent to members.

The text gives "a summary of the provisions of the new law in relation to character of railway equipment and other facilities" and a condensed series of statements setting forth "the conditions and principles which in our judgment should in the public interest be permitted or encouraged by the government." The policy recommended is that the Interstate Commerce Commission adhere to "regulation without undertaking management," leaving each road free "to adopt such designs as are suited to its conditions," the concern of the commission then being "not what the appliance is but what it does."

Frequency of Exhibits

Authorization was given for the appointment of a committee to confer with officers and committees of railroad associations and manufacturers' associations conducting convention exhibits concerning the proposals now under discussion for consolidation of exhibitions. The suggestions relate to railroad associations other than those at whose conventions held at Chicago in March and Atlantic City in June which are now negotiating with a view to so dating their meetings that the same exhibit can be seen by each of them in turn before dismantling. The committee has been instructed to offer its co-operation in these negotiations and also to officers and committees concerned in the mechanical convention at Atlantic City in June and the engineering convention at Chicago in March.

Roadmasters Hold Thirty-Eighth Annual Convention

Meeting at St. Louis Well Attended—An Excellent Program Presented—Large Exhibit

THE THIRTY-EIGHTH ANNUAL CONVENTION of the Roadmasters' and Maintenance of Way Association was held at the Statler hotel, St. Louis, Mo., on September 21, 22 and 23. In spite of the fact that this was the first convention following the end of government control, during the course of which the Railroad Administration took an active interest in the association and its meetings, a large attendance and keen interest in the proceedings characterized all of the sessions. The total attendance exceeded 600.

The officers of this association during the past year were: President, J. W. Powers, supervisor, New York Central, Rochester, N. Y.; first vice-president, W. P. Wiltsee, principal assistant engineer, Norfolk & Western, Roanoke, Va.; second vice-president, L. M. Denney, supervisor, Cleveland, Cincinnati, Chicago & St. Louis, Indianapolis, Ind.; secretary, P. J. McAndrews, roadmaster, Chicago & North Western, Sterling, Ill.; treasurer, Coleman King, supervisor, Long Island Railroad, Jamaica, N. Y.

Over 450 roadmasters were in the room when the convention was called to order promptly at 10 o'clock by the president. F. A. Jonah, chief engineer, St. Louis-San Francisco, and president of the St. Louis Railway Club, welcomed the convention to St. Louis. Colonel Jonah traced the early development of the railways through their pioneer days to the present time, when the need is for more permanent construction. He contrasted conditions in this country with those on French railways. There is not a single wooden bridge or a wooden building in service there today. All track is ballasted with rock, with 80-lb. rail, creosoted ties and screw spikes. Nearly all grade crossings have been eliminated, while the few remaining are protected with gates. The roadmasters in America are confronted with the necessity of working towards this condition of permanency.

H. J. Pfeiffer, chief engineer, Terminal Railroad Association of St. Louis, also welcomed the meeting to St. Louis. He pointed out the improved outlook for track work now, with the increased revenues and improving labor conditions. He emphasized the necessity of improving the physical character of the roads if they are to cope with the demands of traffic successfully.

In his address, J. W. Powers, president, referred to the necessity for the exchange of information and the co-ordination of effort if the maximum results are to be secured. The attendance at these conventions is regarded by most men as seriously as any other work of investigation for their companies. Abstracts of papers and committee reports presented at the meeting appear below:

Economic Weights of Rails

The various elements which enter into the annual cost of rail maintenance are: (1) First cost of rail in tracks—to be stated in terms of an annual charge which, allowing interest at six per cent compounded annually, will be sufficient to yield the original cost of the rail in track at the expiration of the life of the rail, whatever its life may be (this first cost of rail in track is determined from the cost of the rail new, cost of its delivery to the work, laying the new rail, the removal and disposition of old rail, and the salvage value of the rail removed); (2a) interest at six per cent on the first cost of rail in track; (b) taxes at one per cent on the first cost of rail in track; (3) interest at six per cent and taxes at one per cent on such scrap value as the rail in track will have when taken up; (4) the annual labor cost of maintaining rail of various sections in one mile of track, under like conditions of traffic, subgrade, ballast, ties and tie plating, and represents the variation in cost of track maintenance due to different weights of rail sections. Such a figure as this must, of course, be determined on the ground and the values assigned here are based on the records and observations made on selected stretches of track, some miles of selected stretches of track having been under observation for a period of one year, supplemented by such other data as could be obtained.

One detail in connection with the cost of rail maintenance which should be mentioned is the relative costs of laying heavy and light section rail. Our investigation of this phase of the subject developed that costs are apt to be raised by the general use of a heavier section of rail and we have considered the cost of installation to be a flat rate per ton, the difference in tons of rail of various sections per mile of track indicating the effect of the heavy rail on the costs of installation.

With this study of the elements involved, we have developed the annual cost of maintaining rail of various weights of sections, per mile of track, which cost includes interest, taxes, depreciation and labor, and is determined on basis of the life of rail.

The details of costs used in arriving at the annual cost of rail maintenance are given below. The costs refer particularly to the latter part of 1918 and the early part of 1919, and are as follows:

Cost per ton of new rail	$41.00
Cost to lay new rail, including delivery to work, removing and disposing of old rail, per ton	20.00
Salvage value of old rail, per ton, full tonnage allowed	18.00
Net cost per ton of new rail in track	43.00
Average labor cost of rail maintenance per mile of track per year—85-lb. new rail—labor at 40 cents per hour	135.00
100-lb. new rail	114.00
130-lb. new rail	86.00
Tons of rail per mile of track, 85 lb	133.57
Tons of rail per mile of track, 100 lb	157.14
Tons of rail per mile of track, 130 lb	204.29

The details of arriving at the annual maintenance cost of 130-lb. rail are as follows—and we will consider the annual maintenance cost when the average life of rail is 10 years.

The first cost of rail in track is stated in terms of an annual charge, which, allowing interest at six per cent compounded annually, will be sufficient to yield the original cost of the rail in track at the expiration of the life of the rail, which in this case is 10 years.

This annual charge at $43 per ton is			$3.077
2. (a) Interest at 6 per cent on first cost in track—$43..	$2.58		
(b) Taxes at 1 per cent on first cost in track at $43..	0.43		
			3.010
3. Interest at 6 per cent and taxes at one per cent (total 7 per cent) on $18 salvage value per ton when removed..			1.260
First cost (10 year life), per ton			$7.347
Tons of rail per mile of track (130-lb. rail)			204.29
Annual charge per mile of track based on 10-yr. life of 130-lb. rail			$1,501
Annual cost (labor 40 cents per hour) of maintaining 130-lb rail in one mile track			.86
Annual cost of maintenance, including interest, taxes, depreciation and labor			$1,587

These costs for 85-lb., 100-lb., and 130-lb. rails are given by the superimposed curves in Fig. 1.

The next problem is to determine the relative life of the various sections of rail under similar conditions of traffic. Such a problem may apply to the relative life of rail for an

entire railroad, for a division or for merely a stretch of track. The results which were obtained for use in this report are based as far as possible on actual data, supplemented to such extent as was necessary by individual observations and conclusions. The units here used are fairly representative of conditions involving on one extreme—tracks in which the life of, say, 100-lb. open hearth rail is approximately four months, to the other extreme of where the life of this same rail is practically indefinite, the average life of such rail in all main tracks being from 15 to 16 years. It is essential that the relative life of rails of different weights be determined for each railroad or division, as the case may be, as closely as possible based on available data. The conclusions of the committee in the cases under discussion are—that under similar conditions of traffic, the life of 100-lb. rail is 1¾ times that of 85-lb. rail, and that the life of 130-lb. rail is double that of 100-lb. rail. The relative life of over 100,000 tons of 130-lb. rail compared to the life of 100-lb. rail in the same tracks was actually determined, based on four years' experience with the heavy rail, during which time over 4,300 tons of the heavy rail were actually removed from tracks on account of being worn out.

To allow for the comparatively short period of time for which the data concerning heavy sections was taken, the relationship between the average life of heavy section rail and 100-lb. rail was taken to be 2 to 1. The data concerning the relative life of 100-lb. and 85-lb. rail was of a more extended and broader nature but had not been kept in as detailed a manner.

Fig. 1 also shows the influence of the relative life of 85-lb., 100-lb., and 130-lb. rail under similar conditions of traffic, that is, lines representing the life of various sections of rails under similar conditions of traffic, from which can be determined the difference in the annual cost of main-

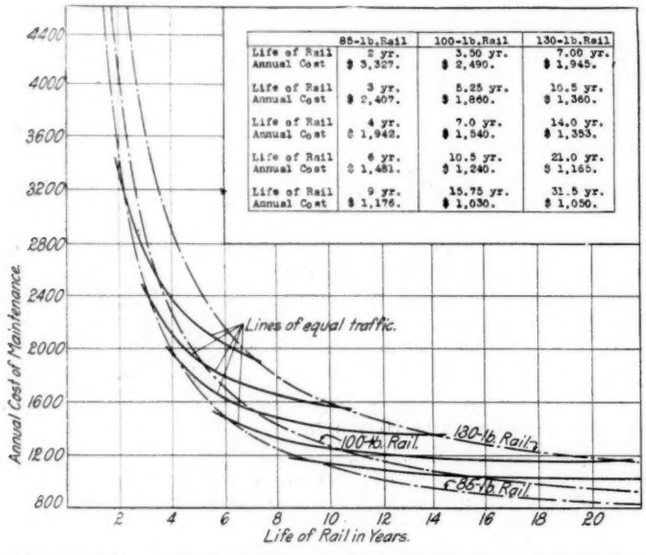


Fig. 1.—The Total Annual Maintenance Cost for Three Weights of Rail

tenance due to different rail sections. For example, suppose 85-lb. rail gave a life of two years—the average maintenance cost is $3,327—then 100-lb. rail should give a life of 3½ years, with an average maintenance cost of $2,490, while 130-lb. rail should give a life of 7 years with an average maintenance cost of but $1,945—clearly a case where heavy section rail could be used economically from a maintenance point of view.

There remains the problem of developing a measure for wear of rail based on various conditions of traffic. To accomplish this, it is first necessary to fix some unit of traffic which will readily adapt itself to such a problem and which also can readily be determined under conditions of actual operation. The number of cars per day passing over a stretch of track was finally selected as the measure of traffic conditions. Such a unit closely reflects the locomotive tons and gross tons; the average weight of cars, the average cars per train and average locomotive miles per train mile ordinarily varying between narrow limits from month to month. Also the average number of cars passing a particular point over a stretch of track during any period can readily be determined at any time without elaborate machinery or organization.

To determine the proper life to assign to 100-lb. rail under various traffic conditions, 14 stretches of track were selected

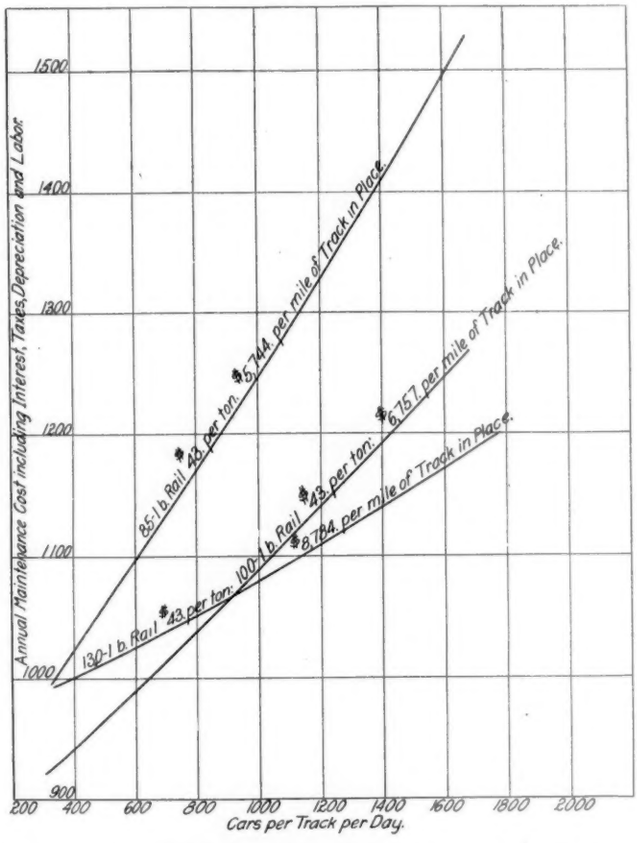

Annual Maintenance Cost including Interest, Taxes, Depreciation and Labor.
85-lb Rail $43 per ton. $5,744 per mile of Track in Place.
100-lb Rail $43 per ton. $6,757 per mile of Track in Place.
130-lb Rail $43 per ton. $8,784 per mile of Track in Place.
Cars per Track per Day.

Fig. 2.—Comparative Annual Cost of Three Weights of Rail with Varying Density of Traffic

for which information concerning the car movement and rail renewals was available. From this information was determined the average life of 100-lb. rail in each stretch of track. This data varied from 417 cars per track per day to 1,697 cars per track per day.

With these data and the computed costs of rails for various weights Fig. 2 was developed, showing the relation of traffic to the annual cost of the three weights of rail. These curves show that the 100-lb. rail is economical for a traffic of not over 900 cars per track per day and that for a greater car movement the 130-lb. rail is economical. As between the 100-lb. rail and 85-lb. rail, the data would indicate that, on railroads using heavy power and having a wide range of physical characteristics, the 85-lb. rail is no longer economical, but that modern railroading demands a 100-lb. rail. When traffic reaches 1,800 cars per day over a double track railroad, the point is reached to consider increasing the weight of section to about 130-lb.

In conclusion, it is desired to point out, first, that the pur-

pose here has been to develop a method by means of which the economic weight of rail for various classes of traffic may be determined. The actual values used in this discussion are not at all theoretical but are based on performance. However, it must be understood that these values actually represent what must be accepted as a particular problem and that if the method here developed is applied it should be done with values determined to fit the particular case in question.

J. B. Baker, engineer maintenance of way, Pennsylvania System, Cleveland, Ohio (Chairman).

Equation of Track Values

It having long been recognized that the old-established practice of making the track sections a standard length, irrespective of the amount of side tracks, railroad crossings or other extraordinary conditions, was an improper method of allotment. For the past several years this matter has been given a great deal of thought for the purpose of finding some way of accurately measuring the different units of work with a view to equalizing the sections. To this end information was secured by a questionnaire containing 22 questions, addressed to about 200 railroad officers, to which 57 answers were received, which have been summarized in the following tabulated statement. The replies were generally uniform:

Subjects:	Replies	Average
1. How many miles average passing siding equal one mile of main line?	57	2.75
2. How many average miles of storage, industrial or commercial sidings equal one mile main line?	57	3.84
3. How many average main line turnouts equal one mile main line?	56	15.3
4. How many average siding, yard or other inside turnouts equal one mile of main line?	56	16.77
5. How many average main line railroad crossings equal one mile of main line?	56	10.95
6. How many average siding railroad crossings equal one mile of main line?	55	19.18
7. How many heavy-traffic, important city street crossings equal one mile of main line?	56	9.20
8. How many (medium) important city street crossings equal one mile of main line?	57	14.00
9. How many light traffic street crossings or outlying highway crossings equal one mile main line?	57	20.90
10. How many average farm crossings or other unimportant crossings equal one mile of main line?	57	46.58
11. How many average stock chutes and pens equal one mile of main line?	45	17.00
12. How many average re-icing stations equal one mile of main line?	37	4.15
13. How many average water stations equal one mile of main line?	46	5.50
14. How many average interlocking plants equal one mile of main line	51	3.40
15. How many average cattle guards equal one mile of main line?	48	48.00
16. How many average feet of track in tunnels equal one mile of main line outside?	38	28.48
17. How many average coaling stations equal one mile of main line?	47	3.82
18. How many average fire or cinder cleaning stations equal one mile of main line?	47	2.47
19. How many average station grounds equal to one mile of main line?	52	5.68
20. How many average automatic signals and incidental fixtures equal one mile of main line?	27	20.74
21. How many miles of average fencing equal one mile of main line?	48	15.07
22. How many feet of ordinary average ditching will equal one mile of main line?	42	101.60

L. C. Ayers, assistant superintendent Norfolk & Western, Crewe, Va. (chairman).

Increasing the Efficiency of Track Labor, by F. G. Jonah, chief engineer St. Louis-San Francisco, St. Louis, Mo.

The first thing necessary in considering the efficiency of workmen is to know accurately what they are doing now and what they are capable of doing, and that gets down to a basis of unit costs. In the past, we have known the total expenditures for various subdivisions of track work, but we have known comparatively little of the amount or quantity of work done for this expenditure.

It is possible for one to measure the results of his track gangs, and various railroads are now beginning to undertake it. It is proposed to describe the system which we have started on our road, and I will say that we regard it as well worth the cost, and believe we are getting some results. The basis of this information is the time book. Heretofore men have reported the amount of time that they put in on different kinds of work, but said nothing about the quantity of work done, and we have provided a time book in which these data can be kept.

We provide, first, a small pocket time book, which the foreman on the job keeps at all times, and in which he enters the names of men employed. During the day he notes in his own language what they are doing, and how much they have done. This is transferred at the close of the day's work to the monthly time book for the half of the month in which the distribution is made.

It was desired to get cost data on the essential work of track maintenance and, after all, this work falls under comparatively few heads. It was deemed advisable to print the heading for the distribution of time and to make it so plain that the foreman would have no difficulty in transferring from his pocket time book to the distribution sheet correctly. For accounting purposes it was necessary to group work under various account numbers.

These books go to the Bureau of Accounts, where the pay rolls and distribution are made up and where the statistical data relating to unit costs are compiled. The figures are made up in sheets covering definite territory. There is, first, a grouping of all the sections on a roadmaster's territory, the costs of the various kinds of work on each section, and an average for the whole territory; next, a grouping of the average of the roadmasters on a division; next, the average of all the divisions in a district, and finally, the average for the whole system. The figures are reviewed by the district engineers and attention directed to work on any territory or section which seems out of line.

Knowing the cost of work, steps can be taken to keep a good average up or to raise a low one, and a few practical hints as to what may be done along this line may be helpful. A few years ago many roads bought power cars for their section forces and, on the assumption that a man could cover so much more territory, lengthened the sections and cut out a few foremen, thus apparently trying to figure sufficient saving in foremen to pay for the gasoline cars. This was at a time when men worked 10 hr. per day. Shortly thereafter the 8-hr. day became general, and the long section is a mistake, as too big a percentage of the day's work is taken up in the time of moving to and from work; and, further, increased traffic, increased number and increased weight of trains all demand more intensive work and supervision, and many sections should be shortened, instead of lengthened. The motor car will be found economical, even on short sections. Wherever a power appliance can be used it should be to reduce manual labor to a minimum.

With increased wages a better personnel can be secured. All sections should be allowed to carry a force the year round, say, of at least a foreman and four men, expanding to a greater number at times in the summer. Steady em-

ployment the year round will hold good men on the sections and give the road a chance to develop good foremen for section and extra gangs.

Consideration should next be given to proper housing facilities. Clean, efficient labor demands a comfortable, commodious, healthful domicile, and it will pay to establish these. Extra gangs should be housed in clean bunk cars. A bunk car train should carry a car equipped with shower bath. Cars should be screened and the commissary should be clean and a substantial, nourishing meal served.

Next, after good men have been secured, see that they are fully equipped with a complete outfit of tools. That should be your personal business. Men should have all the tools they need to do any kind of work at any time.

Next is material. Money is wasted if extra gangs and section labor is waiting for material.

Do not undertake too much work by doubling up section gangs. It destroys the morale of a section foreman to take him off his own territory to help somebody else out, and the practice should be resorted to only in emergencies—wrecks, washouts, etc. Organize extra gangs to do extra work.

Discussion

This paper brought out a lengthy discussion which consisted of criticism of the particular values given in some of the items submitted in the table. This was particularly true of crossings with other railroads, it being the contention that crossings resulted in a proportionately greater amount of work than the committee suggested. The answer given to all of these objections was that the table assumed average conditions and could not be expected to cover all possible cases.

The relation of the motor car to the equation of track values and the length of sections was also considered at length, but nearly all were agreed that the introduction of the motor car can be justified without any attempted economies by reducing force or lengthening sections. It was the opinion that the doubling up of sections sometimes undertaken when motor cars were introduced was ill-advised. The character of the labor now available necessitated more supervision rather than less.

Supervision

It is the opinion of the different members of the committee, based on years of experience under varied conditions, that there is no fixed standard by which the length of a roadmaster's or supervisor's territory should be measured. On an average, the proper length should be 100 miles of main line or a freight train engine district. It should at least be sufficiently short to enable the roadmaster or supervisor to see all of his main line in any one day from a passenger train. Every roadmaster should be furnished with a motor car to enable him to see his men often and work with them on all important jobs.

On account of there being so many different systems on the various railroads we would recommend a general roadmaster on each superintendent's division who should have charge of maintenance of track, the roadmaster or supervisor to report to him. On the larger lines there should be a general roadmaster on each general superintendent's district.

As regards training foremen, one system now being worked very satisfactorily on several roads is to have a small extra gang of 10 to 15 men on the division under the roadmaster, with a first-class foreman in charge. This gang is called the "school gang," and the laborers receive five cents per hour more than other laborers on the division. Each laborer in this gang is to be given his turn at supervision under the direction of the foreman.

The members of this committee are of the opinion that it is not good policy to place young men in soft jobs, such as timekeepers, clerks, flagmen, etc., expecting them to eventually turn out as track foremen and roadmasters. We feel that the severity of our apprenticeship is a very necessary evil to the education of good foremen or roadmasters.

William Shea, general roadmaster, Chicago, Milwaukee & St. Paul, Chicago, chairman.

The discussion brought out the fact that supplying competent foremen is the most serious problem, consequently the plan proposed of training men for these positions was received with favor.

Repair of Frogs, Switches and Crossings by Welding

Proper welding is an art and requires experience and knowledge in operation. If the welded switch point chips readily, breaks off, or otherwise proves defective, the economy of the process is lost. It is, therefore, essential that proper material be used to make the weld and that a thoroughly experienced man be employed. If too much oxygen is used in the flame, it will lead to the metal becoming overheated and cause a burning of the welding seam, while if too much acetylene is used it will cause carbonization of the iron and a hardening of the metal seam. Both of these results cause a condition commonly known as brittleness and is very undesirable in a switch point.

Steel, when subjected to heat, changes its composition. This is especially true when subjected to the oxy-acetylene flame, so in order to get the best results it is necessary that the material used in welding be of a proper composition for the purpose intended. A composition steel put up in rods, and commercially known as "No. 2 rods," should be used for welding frogs and switches.

Claims have been made that welded switch points have outlasted new ones; and also that they have chipped, broken off and proven entirely unsatisfactory. Both of these contentions have a basis of fact, but the conclusion of this committee is that a properly welded switch point is not quite as lasting as one of perfect, new material.

M. Lipman, division engineer, Pennsylvania System, Philadelphia, Pa., chairman.

Other Subjects Discussed

The Committee on the Relative Economy of Treated and Untreated Ties and the Various Kinds of Wood and Their Treatment presented a summary of best practice in the handling of treated ties, including the cutting, storage, adzing and boring and insertion in the track. The committee also presented conclusions favoring the use of treated timber, including a table of the average life secured from treated and untreated ties of various kinds of wood.

Questions raised in the discussion of this report concerning the effect of winter and summer cutting of tie timber were answered in a short talk by John Foley, forester, Pennsylvania system, who showed that environment of the tie after it is made is more important than the amount of sap present. The Committee on the Construction of Street, Highway and Farm Crossings presented a progress report elaborating on the work of the last year's committee, which was devoted almost entirely to a study of macadam crossings impregnated with oils or bitumen compounds. Cost data were submitted on the basis of 1920 prices.

A paper by R. H. Howard, engineer maintenance of way, Wabash, St. Louis, Mo., reviewed the various rules of practice designed to obtain the best results in the maintenance of joints, laying special stress on supervision and efforts made to help the supervisor carry out his work. A note of caution was given on the over-tightening of bolts, pointing to the advantage of heat-treated bolts. Reference to the oiling of track fastenings led to a large amount of discussion of this particular phase of the subject, indicating that it is a matter of live interest. Various speakers outlined their

practices in applying oil either by hand or by machine, including one who told how a special nozzle was applied to a snow melter or other torch to enable such equipment to be used in summer time for spraying oil. There was a general agreement that the use of oil effected a pronounced saving in the material by decreasing the corrosion and also reducing the labor cost of tightening bolts.

The program Tuesday evening included a picture film entitled "The Americanization of Tony" and a reception and dance.

Doctor Hermann Von Scheienk, consulting timber engineer, St. Louis, presented an analysis of the supply of tie timber for American railroads, referring to the recent report on substitute ties and the findings of the United States Forest Services. He believed that while the present relation of growth and consumption points to the end of supply, changes in methods of use and reforestation will definitely postpone depletion.

Enormous stands of timber still remain untouched in central and South America, but the present obstacles to its use are great. Superior practices in the conservation of ties in Europe point to the need of much improvement in this country.

Banquet Well Attended

A banquet tendered the roadmasters, their families and friends by the Track Supply Association was attended by over 500. The speakers of the evening were C. E. Johnston, general manager of the Kansas City Southern, and Colonel F. W. Green, vice-president of the St. Louis Southwestern, both of whom directed their remarks toward those practices in the art of supervising the work of others which would restore the esprit de corps and reduce the nonproductive work, which is the potent source of inefficiency. A man-to-man contact with the foreman is an essential to this end.

Telegraph and Telephone Division

THE TELEGRAPH AND TELEPHONE DIVISION of the American Railway Association opened its third session at Winnipeg, Manitoba, on Thursday morning of this week. There were over 200 members and guests present, making it one of the largest meetings in several years.

The meeting was opened with an address of welcome by Charles Gray, mayor of Winnipeg. Chairman J. S. Caskey (Lehigh Valley), in his opening remarks, outlined the work which had been accomplished by the committees and dwelled on the importance of the future work.

Following the chairman's address, the report of the Committee of Direction was read covering the activities since the last session of the division. The report gave a list of the specifications and drawings approved by letter ballot and contained information with reference to the negotiations with the Bureau of Standards regarding wire line crossings. A manual for office use and a pocket handbook for the use of the field men has been decided on, adopted and will be issued at any early date. Attention was called to the fact that several specifications covering the same class of material have been adopted by different divisions and sections of the American Railway Association and that it is desirable for these specifications to be harmonized. Provision has been made whereby the division may be informed of any action taken by state public utility commissions toward the promulgation of rules inimical to the interests of the division through the appointment of special state and regional representatives whose duty it will be to keep the division informed.

A. E. Stevens, general superintendent, Canadian Pacific, addressed the Wednesday afternoon session of the meeting on the work being accomplished by the division.

New Service Orders Issued by I. C. C.

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division 5, on September 17, gave its first official and public recognition of the improvement in transportation conditions in an announcement of the suspension until further notice of its Service Order No. 11, which gave preference in car supply and transportation for the shipment of 1,250,000 tons of coal monthly to New England through tidewater ports from Hampton Roads to New York, inclusive. The order was recently suspended for a period of five days. "The action of the commission," its statement says, "is based upon a full review of the coal situation and was taken with the acquiescence and consent of the New England coal committee, and because the coal situation in New England had improved sufficiently, so that the present continuance of this emergency order is regarded as unnecessary. Whether the order giving preference will later be revived, will depend upon the further course of coal production and movement." The order of suspension says that "the emergency which caused the commission on the 26th day of July to make and enter its Service Order No. 11 has been measurably relieved."

At the same time, the commission issued Service Orders Nos. 15, 16 and 17, which continue in effect until further order, but with several modifications, the general orders previously issued giving priority to bituminous coal in the use of open-top cars and providing for the assignment of cars to coal mines for public utilities, east of the Mississippi river, and restricting the supply of cars to wagon mines.

These orders recognize the continuance of the emergency as to the transportation of coal, but by definition restrict the number of public utilities which are given preference and also allow a share of the car supply to wagon mines which are able to load cars within 24 hours. The commission declined, however, to grant the request of the steel companies that it modify its definition of coal cars in order to exempt from the order giving priority to coal, cars with sides less than 42 inches in height. By a previous order the definition was changed to exempt cars with sides less than 38 in. in height, whereas, the original order exempted cars less than 36 in. in height. Service Orders Nos. 15 and 16 supersede Service Orders Nos. 7, 9 and 12 as amended and supplemented, while Service Order No. 17 rescinds Service Order No. 14. Service Order No. 7 was entered on June 19, 1920. By Order No. 12, which contained amendments to the previous orders, the priority was continued for a period of 90 days beginning with June 21. In stating that in the opinion of the commission an emergency exists "because of shortage of equipment and congestion of traffic within the territory east of the Misssissippi river," the commission in the new orders omits the words "aggravated by unfavorable labor conditions."

Service Order No. 15 is practically the same as the previous orders which it supersedes. Service Order No. 16, contains new language restricting the definition of public utilities entitled to preference so as to include only those which directly serve the general public, in order to correct certain abuses which have occurred under the previous order. It also fails to take cognizance of the recent complaint made by the packing and live stock interests asking for equal consideration with public utilities for the packers' refrigeration plants. The order provides:

"That effective September 19, 1920, and until further order of the commission, all common carriers by railroad within said territory to the extent that may be necessary in order that public utilities which directly serve the general public under a franchise therefor with street and interurban railways, electric power and light, gas, ice, water and sewer works; also ice plants which directly supply the public generally with ice; also hospitals, schools, and other public institutions of the United States, state or municipal govern-

ments, may be kept supplied for current use, but not for storage, exchange, or sale, be, and they are hereby, authorized to place, furnish and assign cars to coal mines for the transportation of such coal in addition to and without regard to the existing ratings and distributive shares for mines upon said railroads; provided, no cars shall be so placed, furnished or supplied by any such carriers without written application therefor, showing that such coal is needed solely for the current use of the applicant and not for storage, exchange, or sale, in order that applicant may continue its public service in daily operation; which application, in the case of public utilities not owned by some governmental agency, shall be approved by the public service commission or railroad commission of the State in which said plant is located if there be one; and all such applications shall be concurred in by the delivering railroad; and provided further, that such coal shall not be subject to reconsignment except to public utilities or public institutions as above described, and that a written report of the cars placed hereunder shall be made to the Interstate Commerce Commission by the railroad placing the cars, as often as once each week."

Service Order No. 17 directs the carriers to establish and observe the following rule in the supply and distribution of open top cars to wagon mines:

"Upon any day when a common carrier by railroad is unable to supply any mine upon its line with the required open-top cars, open-top cars shall not be furnished or supplied by it to any other mine which customarily does not load or is unable to load such open-top cars with coal within 24 hours from and after the time of placement for loading by the carrier, until all other mines have been fully supplied with open-top cars."

The National Coal Association has issued a statement saying in part:

"With the temporary suspension of the New England priority order, the entire soft coal situation throughout the country is appreciably improved. The suspension of the New England priority makes it possible for a substantial quantity of coal, released from tidewater shipments, to be diverted to other points in the East and in the middle West. The diversion of this coal can be made, it is stated, without prejudice to the supply which New England will need to fill its winter requirements.

"Although the New England order is only temporarily suspended, every evidence is at hand to indicate that the New England demands for the remainder of the year will be met without further resort to preferential shipments. The estimated requirements for New England for the calendar year of 1920 are 22,000,000 tons of soft coal. From January 1 up to September 11, 15,450,000 tons had been shipped into New England. Of this, 8,094,000 tons went all-rail and 7,386,000 tons by way of tidewater. It is expected that the remaining 6,520,000 tons needed to supply the 22,000,000 tons for the winter will be shipped into New England before the middle of December. The railroads have signified their ability to handle this tonnage in the ordinary way, in tidewater and all-rail movements.

"Evidence of how effectively the New England priority worked is found in official figures submitted to the U. S. Geological Survey, showing recent movements of coal for New England. Under the program agreed upon by the bituminous coal operators and New England coal distributors early in July a movement of 2,000,000 tons of coal a month, all-rail and through tidewater was set down. Of this, 1,250,000 was to go to tidewater, the balance all-rail. In July, 2,573,000 tons of soft coal were shipped to New England, 1,566,000 all-rail and 1,007,000 through tidewater. In August, 2,458,000 tons were shipped in the New England movement, of which 1,048,000 were dumped at tidewater and 1,410,000 went all-rail. The all-rail shipments are estimated from reports of the American Railroad Association on the number of cars moving through the Hudson River gateways.

"The fact that New England, at the beginning of last week, had all the coal at disposal that could be immediately absorbed in the tidewater and all-rail movements was the factor that induced the New England Coal Committee to advise the Interstate Commerce Commission that the priority order was no longer necessary.

"With the New England situation now admittedly improved so that special relief is no longer necessary, efforts are being redoubled by the operators, railroads and shippers to clear up the shortage in the Northwest, where the situation has been even more acute. While there has been a slight decrease in the last three weeks in the Great Lakes movement under priority order No. 10, the railroads are endeavoring to make up the deficiency, with the announced expectation of fully meeting the requirements before the close of navigation, about December 1. Up to this week the lake movement for the year aggregated approximately 13,900,000 tons, out of a scheduled movement of approximately 24,000,000 tons. The remaining tonnage must be shipped before the lakes become unnavigable, entailing a movement of over 1,000,000 tons a week. This the railroads promise to accomplish.

"As soon as the Northwest program is cleared up ample coal will be released for the balance of the country, with every assurance that all the wants of the big and small consumers will be adequately met before winter sets in."

Chief Interchange Inspectors' and Car Foremen's Convention

THE CHIEF INTERCHANGE Car Inspectors' and Car Foremen's Association held its twentieth annual convention at the Windsor Hotel, Montreal, P. Q., September 14-16. At the session on Tuesday morning President J. J. Gainey emphasized the benefits derived from the activities of the association in advancing knowledge regarding car construction and maintenance and promoting a uniform understanding of the A. R. A. rules and interchange matters in general. At this session there was also presented a paper by J. M. Gitzen on Transfers and Adjustments of Lading under the A. R. A. Rules for Mechanical Defects.

The meeting on Tuesday afternoon was devoted to a discussion of the A. R. A. Rules of Interchange with particular attention to the changes adopted at the June convention. This discussion was continued on Wednesday morning and at the conclusion a paper on the Transportation of Explosives was read by J. E. Grant of the Bureau of Exposives. An address on the same subject was given by J. O'Donnell, also representing the bureau. The influence of the work of the car department on the elimination of loss and damage to freight was discussed by E. Arnold, freight claim agent of the Grand Trunk.

Two papers were presented at the meeting on Wednesday afternoon, the first on the Lubrication of Freight and Passenger Equipment, by M. J. O'Connor; the second on the Best Methods of Repairing Cars in Train Yards, by O. E. Sitterly. An interesting feature of this session was the showing of moving pictures illustrating proper and improper practices in designing and maintaining brake beams and brake shoes, prepared by the Chicago Railway Equipment Company. The meeting on Thursday was devoted to the reports of committees, the election of officers and miscellaneous business.

The officers chosen for the year 1920-1921 are as follows: President, E. Pendleton, C. & A.; first vice-president, A. Armstrong, Atlanta, Ga.; second vice-president, W. F. Westall, N. Y. C.; secretary-treasurer, W. R. Elliott, T. R. R. A. of St. L. Members of the executive committee: W. H. Sherman, Grand Trunk; and A. Herbster, N. Y. C.

American and European Railroad Conditions*

Comparison Shows Fortunate Position of This Country; American Labor the Best in the World

By S. M. Vauclain
President, Baldwin Locomotive Works, Philadelphia, Pa.

EVERY RAILROAD organization is simply an organization for the manufacture of transportation. The locomotive business over which I preside is merely a manufacturing institution for the production of locomotives, which today are the principal requisites for transportation throughout the entire world.

After the war was over, I went abroad to see in just what condition the various countries might be.

Arriving in France, a country supposed to have been devastated by the war, I found no devastation except in a small portion of the country over which the Germans had traveled. The houses were all shot to pieces, but the battlefields about which we have read so much, and which the pessimists of the world had prophesied would never again bear fruit, had been cleaned and restored to normal condition. Grain was growing in the fields; the vineyards were just as they always had been, most carefully taken care of. Every vine was in its place, or a new vine where the old one had been, and in all that country supposed to have been devastated, where people were satisfied to live in their cellars. I did not see one sorrowful, scowling face. No matter what these people had, they were thankful that there was at least something left them and they were cheerful with each other. They said, "We have much work to do, but we will do it; all we need now is material with which to work, and machines to work with. But without means of transportation it is impossible for us to secure either."

Passing through Vienna, across through Czecho-Slovakia and into Poland, everything seemed to be in fair order. But as we went on and on transportation became more and more difficult. The trains were slower and the delays were great. Transportation seemed to be everything. If only transportation could be provided to these countries, not long would be required to bring them back once more to their original condition, and prosperous people would result.

After reaching Warsaw, we passed up to Danzig, where nearly all the German submarines had been constructed. All the grounds and buildings which had been provided for that work were being used to put together 150 Baldwin locomotives that had been supplied to the government of Poland on faith that the government would some day pay the bill. A visit there confirmed what had been said, that if these locomotives could be made to run, the country would be made to grow. The food that was rotting in the fields in some places could be distributed, and there would be no starvation.

I soon made up my mind that, instead of hundreds of millions of money to be sent to these countries from the United States to feed the people, all that was needed was a few millions in locomotives so that transportation would be at their command; with transportation they could rescue themselves.

Leaving Danzig and going down from Warsaw to Cracow, Lemberg, and Czernowitz, transportation was more and more difficult. The patience of this people was remarkable; the traveling public was jammed in the cars. It was impossible to find standing room for another person.

We hear all sorts of criticisms of the services rendered by the railroads in this country. God forbid that we ever have to undergo transportation difficulties such as I underwent on my way to Bucharest. The bumpers of the cars were crowded; in some inconceivable way men locked themselves to the long buffers with their legs so intertwined that it was impossible to drop on the track. Two men would sit that way, sometimes holding their wives on their laps. The cars were fitted with ladders, and there were resting places for people, and the roofs actually afforded seating capacity. After leaving Czernowitz, there were twenty-five people, men, women and children, on the roof of my car, leaving in the dead of night. They had their belongings with them. I counted seven pigs and many chickens, all carried under the owners' arms, while waiting for the train to move.

But what impressed me was that they enjoyed the transportation that they had. They were satisfied with it, because they had nothing better. I did not hear a single grumble. I did not hear a man swear. I saw plenty of people cry because they could not get a place to stand on the train or another square foot to sit down on top of the roof. Arriving in Bucharest I went to see the Minister of Public Works. He said, "We must have locomotives, and we have no money. Unless we get transportation we are doomed. Now, how are you going to help us?" I suggested that we would swap locomotives for oil. He did not think they could get the oil to Constanza, the seaport. But the old gentleman who had charge of the railroads was an army man. He said, "I think that is the right plan, and I will get a little oil down." I said, "All right. We will start with a little oil, and by the time we get these locomotives over you can haul more oil, and I will get paid some day, somehow."

The next morning the King sent for me, and he said, "You must find some way to sell us locomotives." "I have suggested to your ministers that they buy them with oil." He said, "I will see what I can do."

The next morning the Queen sent for me, and I found the Queen the best business man in Rumania. She said, "You tell me how we must buy the locomotives and I will see it is done." I told her. She said, "It will be done." And it was done.

And that is what we need in the United States—transportation. We are rich in transportation compared to those people, and we have got to lend a helping hand to them.

Transportation has recovered in France probably sixty-five per cent. In England they really need fifty per cent greater efficiency. I was tempted to say they would have to do double what they have now. Their deficiency is not only in locomotives and cars, but in man power.

I have heard it said by some very prominent railway men: "It is up to labor. If labor will only do this or if labor will only to that, we can get this transportation in shape."

I don't like to hear that. We don't work for labor. Our shops are not here for the benefit of labor. Our locomotives, our railway transportation, our passenger stations, are not here for the benefit of the men who do the work. They are here for the benefit of the people of the United States. We are here to operate these railroads and to provide and

*From a talk before the Western Railway Club, Chicago, September 21, 1920.

build the motive power for them, and we must find a way to get along with American labor, which is the best labor in the world. I have twenty thousand men working for me in Philadelphia today, and I cannot find a single fault with those men. It is immaterial to me what nationality a man is. All I care for is that he works as hard as I do—and he has got to.

It would be a calamity if transportation could be restored tomorrow morning, because there would be nothing else in shape for transportation to take care of. It has got to move with everything else. Don't be discouraged if you don't make the headway that your ambitions cause you to try to make. I heard a railroad man say, "We can't hire any locomotive machinists." Of course you can't. A great many who used to be in the railroad shops are automobile machinists today, making more money. But you are going to get some of them back and the situation is going to equalize itself. So don't be discouraged.

But men who employ men must set the example. They must develop an interest in front of the man they are going to command, to show his interest in his work.

I find it not at all difficult to be at my office at seven o'clock in the morning. I go because my men go to work at seven o'clock in the morning, and we have an iron-clad rule that every foreman must be there at seven o'clock in the morning. He must have a cheerful face; he must welcome the men with a smile.

Suppose a man comes down to work in a rainstorm and he cannot get in except at Number Seventeen gate. He passed all the way down from Number One gate to Number Seventeen gate, perhaps a block away. Then he goes in and punches a clock. Before he gets to his work he is soaked. I would not have a time clock in my shop. If a man asked me to punch a time clock I would tell him that I would get a job some place else. I won't punch a time clock, but I will be there at seven o'clock. If the men come at half-past six they can get in. If they come in at Number One door they can walk through the shops until they get where they belong. If a man comes in late, he goes to the Late Ticket office, where he gets a late ticket. The watchman takes the late ticket and sends it to the foreman. The man does not get fined for being late. We fine the foreman for having a man that won't come in on time. The foreman pays the fine; but the man knows he is paying the fine, and he will work harder than any day he came in promptly at seven o'clock.

So-called union labor can be handled, but it can't be handled the way some people try to handle it. In a shop there is no obligation on the part of the workman to do a certain amount of work in a day, unless he is working piece work, and I understand that piece work has been ruled out of the railway shops. But piece work is going to come back again, and all kinds of task work that honest men impose upon themselves is going to come back if we have patience, and only set an example. But we cannot tell men these days to "be there," and "do this." We must be there with them, and say, "Come on, boys, this has got to be done," and it will be done.

We have everything to be thankful for. Our transportation today is at least eighty per cent normal. Let us not think that we must have a whole lot of new locomotives and new cars. Let us make the best out of the locomotives we have. If a man comes to me to buy locomotives I say, "Get along with as few as you can. Next year buy more. After that help yourself." Now is the time to economize, to take up what we have and be satisfied with it, to get things in shape. If these railway clubs are persisted in, if men speak in the proper temper at these clubs and get everybody interested in setting him the example, we are not going to have trouble with the laboring man of this country, and the transportation problem will be solved.

Prompt Handling of Refrigerator Cars Urged

WASHINGTON, D. C.

COMMISSIONER AITCHISON of the Interstate Commerce Commission, has issued the following circular letter to its terminal committees.

"Your attention is directed to the urgent necessity for the prompt handling of refrigerator cars. Strong representations have been made to the commission as to the enormous volume of highly perishable foodstuffs which must be moved by the railroads during the remainder of the year. If these commodities are not transported promptly and efficiently, a double loss will incur, and the producer and consumer will both suffer.

"Please immediately inaugurate a campaign and secure the co-operation and support of all carriers and all shippers and receivers of perishable freight in your territory to the following:

"To the Shippers—Order cars only as required for immediate loading. Endeavor to load so that car may go forward on *first* train after placed.

"To the Consignees—Give order for delivery in advance of arrival. Unload car with all possible speed and in every case so that empty car may be taken out on *first* switch following placement. Consider the handling of these cars in terms of *hours, not days.*

"To the Carriers—Handle refrigerator cars, either loaded or empty, in preference to any other class of car.

"When in bad order, have them prepared in preference and as quickly as possible. See that cars are placed promptly for unloading and when empty, started to loading point on first train.

"See that the use of refrigerator cars is confined to appropriate commodities, and that they are not abused.

"Kindly report to the undersigned the degree of success which attends your efforts to relieve this acute and dangerous situation."

In a similar letter to all state railroad and public service commissions, Commissioner Aitchison asks them to lend their active influence and support to this important matter and, through their inspectors or by other means, assist in the prevention of delays to refrigerator equipment.

Transportation Conditions

WASHINGTON, D. C.

AS INDICATING THE FACT that the congestion of freight resulting from the switchmen's strike has been nearly cleared up, the weekly report of freight car accumulation compiled by the Car Service Division of the American Railroad Association for the week ended September 10 shows the greatest reduction made in several weeks, to 50,737 cars, as compared with 64,060 the week before. For several weeks there has been a reduction of about 5,000 cars and a special drive was conducted during the week of September 10. An accumulation of 50,000 cars is very little above what is to be expected under normal conditions when the volume of traffic is heavy. Large decreases were made during the week in the number of cars held for local destinations and on account of connections' inability to accept. A total of 25,808 cars was held for export and coastwise movement. There were 8,387 cars held on account of inability of connections to accept, 4,372 for local destinations, 2,553 for disposition other than reconsignment, 3,039 for reconsignment, 4,369 on account of consignees' inability, and 2,209 on account of embargoes.

Revenue freight car loading for the week ended September 4 failed to continue the gains that had been shown for several previous weeks, but the total was 947,743, as compared with

904,393 in 1919, and 872,560 in 1918. For the previous week the total was 985,064, which was within 15,000 of a record. The large increase as compared with the corresponding week of 1917 is accounted for by the fact that the Labor Day holiday occurred in that week that year. For the five weeks ending September 10, the loading has been greater than for the corresponding period of 1918. The report compiled by the Car Service Division of the American Railroad Association is as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts: Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, September 4, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Corresponding year 1919	Corresponding year 1918	Received from connections: This year 1920	Corresponding year 1919	Corresponding year 1918
Eastern	1920	7,079	3,043	48,562	3,366	8,353	11,279	46,908	98,410	227,000	.....	.....	270,565	.....	.....
	1919	7,158	2,609	44,098	3,309	7,013	6,782	20,247	112,599	.....	203,815	201,877	.....	244,067	242,436
Allegheny	1920	2,973	3,728	61,143	6,372	3,245	15,675	39,811	74,517	207,464	.....	.....	145,410	.....	.....
	1919	3,401	3,403	55,246	3,519	3,387	14,164	40,855	74,499	.....	198,474	199,841	.....	139,551	176,564
Pocahontas	1920	170	247	23,916	711	1,875	205	3,074	6,799	36,997	.....	.....	21,014	.....	.....
	1919	253	355	21,606	626	2,195	294	120	9,017	.....	34,466	38,542	.....	20,120	19,105
Southern	1920	3,261	2,124	24,875	1,640	18,293	3,026	33,355	38,292	124,866	.....	.....	74,858	.....	.....
	1919	3,362	2,410	23,991	402	18,363	2,316	18,508	50,886	.....	120,238	114,698	.....	71,481	68,473
Northwestern	1920	13,092	7,147	12,268	1,488	15,831	43,613	27,490	38,884	159,813	.....	.....	63,251	.....	.....
	1919	14,766	9,484	8,198	1,181	15,543	42,066	20,285	48,883	.....	160,406	157,362	.....	65,834	71,199
Central Western	1920	11,125	10,534	23,166	470	6,282	2,962	31,621	43,290	129,450	.....	.....	74,114	.....	.....
	1919	12,947	12,272	18,909	713	6,035	3,429	21,666	51,651	.....	127,622	109,524	.....	68,265	66,244
Southwestern	1920	4,153	2,379	5,419	121	8,516	500	16,804	24,261	62,153	.....	.....	53,433	.....	.....
	1919	5,295	2,767	6,503	106	8,342	353	12,430	23,576	.....	59,372	50,716	.....	50,561	41,230
Total all roads	1920	41,853	29,202	199,349	14,168	62,395	77,260	199,063	324,453	947,743	.....	.....	702,645	.....	.....
	1919	47,182	33,300	178,551	9,856	60,878	69,404	134,111	371,111	.....	904,393	.....	.....	659,779	.....
	1918											872,560			685,251
Increase compared	1919	.....	.....	20,798	4,312	1,517	7,856	64,952	.....	43,350	.....	.....	42,866	.....	.....
Decrease compared	1919	5,329	4,098	.....	.....	.....	.....	.....	46,658	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	75,183	.....	.....	17,394	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

The report of deferred car requisitions for the week ending September 8 has been held up for correction. It has become apparent that a number of roads have been reporting the accumulated shortage for a week instead of the average daily shortage, as indicated by the fact that some roads have reported a shortage considerably in excess of their daily loading capacity. Therefore, telegraphic requests have been made for a correction of the figures and it is believed that the investigation will show that the figures which have been reported are too high.

Reports of the local car service committees for the weeks ending September 11 and September 18 show continued and marked improvement in transportation conditions at almost all points and a general freedom from congestion. In many cities business offered is still greater than the railroads can handle currently, but at many points covered by the reports all business is being handled currently. Generally speaking, switching service and interchange are on a normal basis. A shortage of cars is reported for most terminals, but there are also some reports of comparatively light business attributed to some extent to the uncertainty of future business conditions. Special efforts are being devoted to the repair of bad order cars and continued progress is reported in the campaign for heavy loading and prompt release of equipment.

The Pittsburgh committee for the week of September 11 reports that rearranged crew and locomotive runs which admit of skipping one or more classification yards compared with the former practice, and the movement of cars with shipments for one consignee or destination in solid trains or blocks, has enabled the railroads to surpass previous records as to volume handled. The labor situation is reported as normal. Industries report cancellations and suspension of orders to some extent but orders still remain on the books representing a volume of production estimated about 40 per cent in excess of the transportation capacity available.

At Milwaukee 7,434 cars were repaired during the week as compared with 6,417 the previous week. The grain loading Buffalo lake boats for the week of September 10 was 164,250 bushels, as compared with 347,875 bushels the preceding week.

The St. Louis committee reports that 459 embargoed cars were released during the week of September 11. During the week 18,840 cars were repaired and the switching force is normal.

At Buffalo 200 embargoed cars were disposed of during the week of September 17. The normal switching force at this terminal is 2,004 and 1,850 men were working. A large number of former switchmen have applied for re-employment, but with other lines than those with which they were employed. The grain movement has started and there were 1,411,737 bushels of grain in the elevators. The labor situation is reported as practically normal. 889 cars of grain were loaded out during the week of September 15, as compared with 686 the week before.

The Washington committee reports that interchange, industrial and train switching are being handled currently and promptly.

At New York many solid trains have been made up to speed up the operation of the terminal. All lines have modified embargoes to allow practically a free flow of freight into the terminal with the exception of freight handled on a permit basis. Switching is normal on all roads. Six hundred and seventy bad order cars were repaired on Sunday. Good results are being obtained through the efforts of special representatives in checking the prompt release and heavier loading of equipment. One line handled 4,000 more tons of freight at one of its New York stations during August than ever before in the history of the road. Reports from another line indicate an increase of 33 per cent in the loading per car as compared with last year. 18 cars of New York pier freight and 20 tons of l. c. l. freight were placed in storage, due to slow acceptance by consignees.

The Philadelphia committee, reporting for the week of September 17, said that all embargoes affecting the terminal had been removed. Switching service at Philadelphia and at Camden is normal. A total of 19,962 cars was unloaded at Philadelphia during the week, as compared with 17,051 cars the week before.

The Cleveland committee reported that the practice of solid movement to breakup points outside the city is being continued and it is necessary to reroute traffic. Switching service is about 95 per cent normal. All lines are repairing an average of about 1,600 cars a day. An average of 1,482 men were at work on car repairs, as compared with an authorized force of 1,795. The switching force was 348 men,

as compared with a normal of 372. The Cleveland Yardmen's Association, after a vacation of 22 weeks, voted to return to service without the restoration of seniority rights.

The committee has inaugurated a special campaign to expedite the release of refrigerator equipment. A special check by the committee covering 10 days in August showed 3,214 cars held over the free time, a total of 12,100 car days, by the receivers, while 1,108 cars were delayed for a total of 3,062 car days by shippers for loading.

The Cincinnati committee reported labor as practically 100 per cent as to numbers, but only 75 per cent in efficiency.

The Chicago committee for September 11 reported switching as being performed generally on a normal basis. The number of cars held on account of accumulations had been reduced from 1,545 on September 4 to 793 on September 11.

The St. Paul committee reports that terminal transportation conditions are efficient on all lines, including the interchange of cars, switching to and from industries and the movement of trains in and out.

New York Central Bond Issue

AFTER HAVING ISSUED its formal order approving the $25,000,000 bond issue as noted in last week's issue the Commission on September 21 issued a report of Division 4 on the railroad's application which discusses some of the points raised at the hearings, particularly the question as to the amount of the Commission allowed to the bankers that handled the issue. The report says in part:

"It developed at the hearing that the proposed collateral trust bonds had been sold on August 20, 1920, subject to our authorization. While the law does not prohibit such a conditional sale in advance of approval of an issue of securities, carriers should realize that we shall not be controlled in our action by representations that failure to accord approval of issues conditionally sold will result in disturbance or disarrangement of plans based upon anticipated approval.

"The facts in regard to the sale are briefly these: It was made without competition. Applicant dealt only with J. P. Morgan & Co., and accepted that firm's agreement to endeavor to form a syndicate to purchase from ourselves and associates at 97 per cent and accrued interest and offer for public subscription at par and accrued interest. If this endeavor proved successful J. P. Morgan & C., agreed to buy the bonds at 96.5259 per cent of par and accrued interest, or, in other words, upon a 7½ per cent basis. The associates mentioned in the agreement were eventually the National City Company and the First National Bank of New York. The evidence shows that on August 18, 1920, J. P. Morgan & Co., by wire and letter, invited various dealers in investment securities throughout the country to become members of the syndicate, notifying them of the amounts of their participation, to which they were to signify their assent by 10 o'clock on the morning of August 20, when the subscription books were to be formally opened. Out of 428 dealers to whom the invitation was sent, including J. P. Morgan & Co., 403 accepted. The subscription books were closed within two hours of their opening, and there were 6,473 subscriptions, at par and accrued interest totalling $39,393,500, an oversubscription of more than 50 per cent. The evidence shows that the contract of conditional sale between J. P. Morgan & Co., and applicant was not consummated until after the formation of the syndicate on August 20.

"The entire cost to the applicant of marketing the issue was the difference between the par value of the bonds and the sale price to J. P. Morgan & Co., this difference being $868,525, plus small amounts for taxes, legal services, and the engraving of the certificates. J. P. Morgan & Co., received as syndicate manager $118,525, which was divided with its associates, and out of which it paid certain clerical expenses, but none of the other expenses of the syndicate. The syndicate members who placed the bonds with investors received from the syndicate for such services a commission of 1½ per cent on all sales within the amounts allotted to them and a commission of 2 per cent upon sales in excess of the allotments. After deducting these commissions and the expenses of the syndicate, the portion of the $750,000 remaining was distributed to members of the syndicate in proportion to their allotments. This profit amounted to about 1.1 per cent. Out of the 403 syndicate members, 26 sold no bonds. The distribution of the $750,000 is shown in the following table:

Gross profit of 3 per cent		$750,000
1½ Per cent straight selling commission on $25,000,000	375,000	
½ Per cent extra selling commission on $10,026,000	50,130	
		425,130
		$324,870
Legal expenses, advertising, etc.		50,000
Net profit, or 1.09948 per cent of $25,000,000		$274,870

It appears that the main items of expense comprising the $50,000 were approximately $27,000 for advertising and $15,000 for legal services.

"Conditions arising out of the war have radically changed the character of the investment market. Evidence was offered to the effect that owing to the heavy income tax the tendency of large individual buyers is to purchase taxfree securities. High returns promised in competing lines of investment deter some investors from investing freely in railroad securities. Higher margins on the placement of certain competing investments also incline distributors to prefer the placement of the latter. The banks moreover find it necessary to use their funds chiefly for commercial purposes. To a much greater extent than heretofore railroad securities must, therefore, be sold to small buyers, and this makes necessary more comprehensive and expensive machinery of distribution. Applicant testified that it had no means of effecting such distribution upon its own account, and that it resorted to J. P. Morgan & Co., because of that firm's prestige and experience, and established connections with investment houses all over the country. In other words, Morgan & Co. acted as middleman between the corporation and the distribution machinery necessary to place so large an issue of securities, and in the opinion of applicant the issue could not have been effected in any other way! Evidence was also offered by representatives of investment houses as to the greatly enhanced cost at the present time of distributing securities, because of increased salaries, higher rents, the necessity of appealing to a wider field of investors, and other factors entering into the conduct of the business.

"We have thought it necessary to set forth in detail the circumstances and cost attending the marketing of the proposed issue, because the assurance of reasonable terms afforded by competitive bids was not present. In saying this we realize that, under the conditions prevailing in the financial world, applicant probably could not have obtained the advantage of open competition; but this fact merely emphasizes the necessity of our considering in this and all similar cases the terms of sale which we are asked to approve. In the present instance, in view of the small financial risk and the apparent ease with which the subscriptions were obtained, we think the discount at which the bonds were sold was liberal. The evidence, however, is not sufficient to justify a conclusion that the cost of floating the issue was such that we ought, under all the circumstances, to withhold approval of the terms and conditions set forth in applicant's petition.

"The subject matter is plainly one deserving of attention, and it is desirable that carriers intending to present applications for the approval of security issues should appreciate that the proposed terms and conditions will be the subject of our careful consideration."

General News Department

William C. Hopson, airplane mail carrier, made the trip from Cleveland, Ohio, to Mineola, N. Y. (New York City), on September 18, in three hours, one minute, or at the rate of about 141 miles an hour. The usual time for this 425-mile trip is over four hours.

A fine of two thousand dollars was imposed on the Lehigh Valley Railroad in the United States District Court at New York City on September 20, for wilful departure from legal freight tariffs. The indictment dealt with overcharges on shipments of hay made in 1916 and 1917.

The Railway Association of Canada, in Circular 9, dated September 17, referring to the present shortage of cars, calls upon all railways to apportion available cars among shippers on an equitable basis. Industries emptying cars on their sidings are not entitled to any more favorable treatment than that accorded other shippers. In cases where a shipper empties a larger number of cars than he is entitled to for loading on an equitable distribution basis, he must be called on to turn back the excess.

The Southern Railway has put in service 1,093 freight cars since March 1, when the railways were returned to their owners; and new cars are being completed at the rate of eight cars a day. This equipment consists of 555 new steel underframe box cars and 538 steel frame coal cars, rebuilt from bad-order cars which were totally unfit for service and past the stage for economical repair. The cars now being turned out are coal cars. The 1,093 cars were all built at the Lenoir Car Works, Lenoir City, Tenn.

Franklin K. Lane, former Secretary of the Interior, summarizing a survey of transportation conditions throughout the country, made through 900 field representatives of the Fidelity & Deposit Company of Maryland, reports a marked improvement. "Transportation conditions are improving everywhere," the statement says, "and substantial reduction in the freight-car shortage is reported in every district except in the Rocky Mountain states, in the Southwest and in the district including Kentucky, Tennessee, Alabama and Mississippi. An improvement is noted in the latter district. There is no shortage of raw material sufficient to curtail production reported from any of the nine geographical districts into which the country was divided for the purpose of the survey. In no section of the country did the investigators find sentiment in favor of government ownership of railroads, and everywhere better transportation conditions are reported."

R. R. Y. M. C. A. International Conference

The fifteenth international conference of the Railroad Young Men's Christian Associations of North America will be held in Richmond, Va., November 18-21, 1920. It has been the custom to hold these conferences at three-year intervals, but the world war has interfered with this arrangement and this will be the first conference for a number of years. It is expected that about 1,200 railroad men will be present, representing every section of the country and every department of railroad service. The program is being prepared under the direction of Dr. John P. Munn, chairman of the Transportation Committee of the International Committee of the Y. M. C. A., and E. L. Hamilton, senior transportation department secretary.

B. & O. Spans Rolled Into Place

Two trusses with a total length of 410 ft. were rolled out and a double track deck plate girder span 97 ft. long and a double track through truss span 261 ft. in length were rolled into place in the bridge of the Baltimore & Ohio across the Allegheny river at Pittsburgh in 17 min. on September 1. Because of the heavy traffic passing over this bridge and the necessity of maintaining practically continuous service the new spans, which were of a total weight of 1,100 tons, were erected on falsework on the downstream side of the existing structure. Another span 434 ft. long is now being erected and will be moved into its final position in a similar manner late in the fall, at which time the new spans referred to above will be raised approximately 15 ft. vertically to bring them to the new level of the bridge. This work as projected was described in detail in the *Railway Age* of May 28, 1920.

A Parting Shot

John Grunau, head of the "outlaw" switchmen's organization, issued the following announcement at Chicago on September 13:

"In the Chicago switching district it is now declared fair to work on any railroad on and after September 13. We also advise that our members in other districts resume work on the best terms possible in their respective divisional points.

"With reference to seniority rights, though we have lost our seniority we have won one of the greatest battles in the history of the railroads by forcing the government to appoint the United States Railroad Labor Board.

"We believe that every railroad man in this country is in sympathy with the so-called outlaw organization whether he has been on a vacation or not. We feel that they know we were instrumental in getting the recent increase.

"But with half of the industries of the country running on a 50 per cent normal basis and our fellow workmen who are engaged in capacities other than railroading being laid off because of the congested condition of the country's transportation facilities, we must take humanity into consideration and relieve the suffering this winter in preference to remaining out on vacation fighting for our seniority rights, and go back to work and concede our seniority."

Short Lines Want Per Diem Rate and Practices Restored

The Interstate Commerce Commission, Division 4, has undertaken an investigation of the refusal, since the termination of federal control, of a number of trunk line roads which connect with short lines to allow a reclaim allowance of two day's per diem charge to roads of 100 miles or less in length, in accordance with a practice established during the period of federal control by the director-general of railroads, and it will also look into the increase in the per diem rate charged to the short line roads. The per diem rental established during the period of federal control was 60 cents a car, but this was increased on March 1 by the American Railroad Association to 90 cents, over the protest of the short lines. The objection is made particularly by those short lines which did not accept the government's guarantee for the six months' period from March 1 to August 31.

A hearing was held before Division 4 of the commission on September 20, at which officers of the American Short Line Railroad Association asked the commission to enter an order requiring the continuation of practices established during federal control as to per diem and the two days' reclaim for the six months' guarantee period for the benefit of lines which did not accept the guarantee. It was stated that there was no desire to complicate the question by discussion of the practice to be established after September 1. Bird M. Robinson, president of the American Short Line Railroad Association, pointed out that the failure of many of the short lines to accept the guarantee was not because they expected to earn more, but because the time allowed them within which to accept was so short, and he said that their revenues had been very seriously affected by the increased car-service costs. The short lines take the position that under Section 208 of the transportation act the former practices were expected to be continued.

Daniel Willard, chairman of the advisory committee of the Association of Railway Executives, said that the per diem rate was increased because it was unremunerative, but that his committee had counselled a continuance of the two-day reclaim.

Counsel for the Association of Railway Executives does not share the opinion that the short lines have a legal right to the continuance of the former practice, but the advisory committee believes that it would be only fair that it should be continued during the six months' period. He thought that Congress had not provided for this, but that it would have done so if its attention had been called to the matter, and that the law would not prevent the commission from continuing the previous arrangement for the guarantee period. He had not formed an opinion as to the practice after September 1. It was pointed out that to order the 60-cent rate and the two-day reclaim restored as of March 1 would be at the expense of the United States Treasury, as most of the lines that have collected the higher rate are protected by the government guarantee.

American Engineering Council

The American Engineering Council of the Federated American Engineering Societies announces that its first meeting is to be held at the New Willard Hotel, Washington, D. C., on November 18 and 19. Temporary officers and committees will be chosen on Thursday morning, the 18th, and in the afternoon of that day there will be an address by J. Parke Channing, of New York, followed by a discussion of the field of activity for the Federated American Engineering Societies.

On Friday morning permanent officers will be elected and a constitution and by-laws will be presented for adoption. A committee on plan and scope will also report and general business will be transacted. In the evening there will be an address by Herbert C. Hoover.

The organization of the "Federated American Engineering Societies" was effected at Washington last June (*Railway Age*, June 11, page 1667). It includes civil, mining, metallurgical, mechanical, electrical, testing, railway, highway, municipal hydraulic, sanitary, water works, bridge, agricultural, illuminating, heating, ventilating, refrigerating, safety, radio, fire protection, automotive, industrial, military, marine, naval and chemical engineers, and architects, naval architects, chemists and geologists.

Sixty-six societies were represented at the June meeting and the action then taken was unanimous. The Joint Conference Committee of the four leading societies (29 West 39th street, New York) has issued a bulletin explaining the purpose of the federation, and, from responses received, states that American Engineering Council will have a greater number of member societies than Engineering Council, and will represent an agggregate membership in excess of 60,000.

Railway Fire Protective Association

This association will hold its seventh annual meeting at the Southern Hotel, Baltimore, Md., on Tuesday, Wednesday and Thursday, October 19, 20 and 21.

The program for Tuesday morning includes the address of the president, the report of the executive committee and the following four committee reports: On statistics, George R. Hurd (I. C.), chairman; on protection of bridges and trestles, De Witt Rapalje, chairman; on oil-burning locomotives and hazards incident to storage and supply of fuel oil, J. L. Durand (S. P.), chairman; on the use of inflammable and explosive compounds and liquids in shops, C. P. Beistle (Bureau of Explosives), chairman.

For Tuesday afternoon there are four items, viz.: Report of committee on freight car heaters, E. A. Ryder (B. & M.), chairman; report of committee on hand book (merchandise in transit), W. S. Topping (Bureau of Explosives), chairman; illustrated talk on construction and operation of oil-burning appliances, by James Lalor; report of committee on fire protection of passenger train cars, E. W. Osborne (N. P.), chairman.

On Wednesday morning the discussion will be on the report of the committee on fire prevention and protection of shop plants, J. R. Peters (Penn.), chairman.

On Wednesday afternoon there are four items, viz.: Address by C. W. Galloway, vice-president of the Baltimore & Ohio; a paper on "Moral Hazard Involving Personal or Individual Responsibility for Fire Losses," by W. S. Wollner (N. W. P.); report of committee on storage and handling of gasoline and electric motor trucks in freight depots and terminals, E. W. Reilly (Erie), chairman; paper by W. F. Hickey (N. Y., N. H. & H.) on hazards incident to the location of industries on railroad rights-of-way.

On Thursday morning there will be a symposium on practical problems of field engineers (a) Special shop hazards—discussion directed by P. A. Bissell; (b) special hazards incident to transportation and terminal operation—discussion directed by E. W. Osborne (N. P.); (c) how to obtain personal recognition of individual responsibility for fire loss—discussion directed by E. Williamson (Southern).

This will be followed by unfinished business, new business and the election of officers.

Members are requested to reserve their rooms direct with the hotel management. The Southern Hotel has quoted rates ranging from $3.50 for a single room with shower bath, up to $7 for a double room, with bath, and twin beds for two persons.

The chairman of the committee on arrangements for this meeting is B. S. Mace. The president of the association is E. B. Berry (Southern), Washington, D. C., and the secretary is R. R. Hackett (B. & O.), Baltimore, Md.

Track Supply Exhibit at Roadmasters' Convention

With some 56 exhibitors of railway track materials, supplies and appliances on display, the efforts of the Track Supply Association were fully rewarded, for the ninth annual exhibit held in connection with the Roadmasters' convention at St. Louis was an entire success. The exhibitors were at some disadvantage because the show had to be held on the third floor, whereas the convention was on the sixteenth. A further handicap lay in the fact that the exhibits had to be divided up in a number of small rooms. Notwithstanding these difficulties, the attendance at the show was large.

The officers of the Track Supply Association for the past year were: President, W. H. Armstrong, manager, tie tamper department, Ingersoll-Rand Company, New York; vice-president, David T. Hallberg, assistant general sales agent, The P. & M. Company, Chicago; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.; directors, E. T. Howson, western editor, *Railway Age*, Chicago; Alexander Chapman, western sales manager, The Rail Joint Company, Chicago, and H. T. Potter, sales manager, Wyoming Shovel Works, Wyoming, Pa.

Following is a list of the exhibitors with the supplies displayed and representatives:

Air Reduction Sales Company, New York—Oxygen, acetylene, welding and cutting apparatus. Represented by R. T. Peabody, F. L. Nix, J. Sewings and B. A. Eliason.

American Hoist & Derrick Company, St. Paul, Minn.—Transparencies and photographs of railroad ditcher. Represented by J. J. Cox, J. L. Hickey, Miss Helen Hoeller, W. B. Maurer, Daniel O'Brien, Howard Johnson and C. T. Hook.

American Steel & Wire Company, Chicago—Railroad fence, woven wire fence, rail bonds, concrete reinforcement and American steel fence posts. Represented by L. B. Shanahan, John Alexander, J. W. Collins, A. N. Frouds and M. E. Evans.

American Valve & Meter Company, Cincinnati, Ohio—Switch stands. Represented by J. T. McGarry and F. C. Anderson.

Anchor Company, Milwaukee, Wis.—Anti-rail creepers. Represented by Orlando Metcalf and George H. Chadwell.

Balkwill Manganese Crossing Company, Cleveland, Ohio—Models of articulated cast manganese railway crossing. Represented by S. Balkwill.

Bethlehem Steel Company, Bethlehem, Pa.—Switch stand model 51-A, switch stand model 1217, positive switch stand model 52-A, switch stand model 1222 with and without target. Represented by R. E. Belknap, R. W. Gillispie, Neil E. Salsich, J. F. Hennesy, E. D. Cabpbell, J. H. Budd, E. B. C. Goyne, J. H. Riddle, C. S. Jordan and C. A. Alden.

Buda Company, Chicago—No. 19 free running section car, jacks, No. 9 "C" switch stand, track drill, tool grinder. Represented by M. A. Evans, C. H. Bull, S. F. Francks, T. L. Hall and Geo. W. Hoover.

Bucyrus Company, South Milwaukee, Wis.—Slides showing steam shovels and spreader plow. Represented by E. G. Lewis and Mark J. Woodhull.

Carbic Manufacturing Company, Duluth, Minn.—Flare lights and cakes and oxy-acetylene cutting and welding equipment. Represented by C. H. Bolinder.

Chamberlain, M. E., St. Louis, Mo.—Forms and reinforcement for concrete ties, posts, poles and buildings. Represented by M. E. Chamberlain.

Chicago Malleable Casting Company, Chicago—Rail anchor tie plates. Represented by W. M. Osborn.

Crerar, Adams & Co., Chicago—Eureka bonding drills, Calumet track drills, jacks, shovels, brooms, die starters, oil cans and emery grinders. Represented by Russell Wallace, G. B. Bassett, J. A. Martin, E. W. Koon, K. D. Begeman and W. I. Clock.

Diamond State Fibre Company, Bridgeport, Pa.—Fibre for insulated joints. Represented by G. Swallow.

Duff Manufacturng Company, Pittsburgh, Pa.—Track jacks, square and round socket levers and automatic lowering geared ratchet. Represented by C. N. Thulin and E. E. Thulin.

Elliot Frog & Switch Company, East St. Louis, Ill.—Guard rail clamp.

adjustable switch stand and bridle rods. Represented by W. F. Fairback, W. H. Elliot and D. Fairback.

Fairbanks, Morse & Co., Chicago—No. 41 light inspection car, equipped with two cylinder kerosene engine; No. 40 heavy section and extra gang car, No. 32 section car and No. 36 maintainer's car. Represented by E. C. Golladay, A. A. Taylor, F. M. Condit, Charles Wilson, G. Howard, D. K. Lee, E. J. Coverdale, L. H. Matthews, E. E. Pendray, H. L. Hilleary, H. J. Beckers and L. Norvell.

Fairmont Gas Engine & Railway Motor Car Company, Fairmont, Minn.—EZ-QH 6-hp. ball-bearing motor and EZ-PH 4-hp. ball-bearing motor roadmasters' inspection car, hand car engine. Represented by H. E. Wade and W. D. Brooks.

Friction Car Stop Company, Cleveland, Ohio—Model track and car stop. Represented by J. H. Duffy.

Hauck Manufacturing Company, Brooklyn, N. Y.—Kerosene burner thawing outfits. Represented by Willis C. Squire and G. A. Nelson.

Hayes Track Appliance Company, Richmond, Ind.—Derails and stands. Represented by S. W. Hayes and H. J. Mayer.

Industrial Track Construction Company, St. Louis, Mo.—Car bumpers.

International Bituconcrete Company, New York City—Bituminous floors, platforms and crossings. Represented by G. A. Henderson.

Ingersoll-Rand Company, New York City—Tie tampinug equipment and air-operated track tools. Represented by William H. Armstrong, C. S. Kulp, J. N. Thorp, Jr., and C. H. Dougherty.

Kalamazoo Railway Supply Company, Kalamazoo, Mich.—No. 16 inspection car, No. 17 motor car, electric tie tampers, supervisor's combination gage and level. Represented by J. B. McKinnon, D. A. Stewart and H. R. Miller.

Lackawanna Steel Company, Lackawanna, N. Y.—Rail joints, safety head angle bar, joint plates, hook shoulder tie plates, track bolts and spikes, deseamed rails, steel sheet piling. Represented by G. O. Benson, H. G. Austin, C. M. Cuthbert and C. C. Holmes.

Lundie Engineering Company, New York City—Tie plates. Represented by C. Z. Moore, Eugene Brandeis, W. Brooke Moore and L. B. Armstrong.

Maintenance Equipment Company, Chicago—Illustrations of the three-man rail layer, photographs derrick truck car, ballast screen, models of a switch point straightener, blue flag derail, fence posts, tie spacer and models of unloading hooks. Represented by W. W. Glosser.

Mudge & Company, Chicago—Class E-6-K kerosene inspection motor car, ES-2-K standard section car, GS-4-K section car, E-4 gasoline inspection motor car. Represented by Burton W. Mudge, Robert D. Sinclair, Karl J. Eklund, L. O. Stratton, C. P. Benning, J. M. Mulholand and W. F. Baker.

National Lock Washer Company, Newark, N. J.

Oxweld Railroad Service Company, Chicago—Oxy-acetylene welding and cutting apparatus. Represented by W. H. Kofmehl, C. M. Marshall, L. C. Ryan, A. W. Whiteford, R. C. Kohn and F. C. Tichen.

P. & M. Company, Chicago—Anti-creepers and bond wire protectors. Represented by D. T. Hallberg, J. E. Mahoney, F. W. Reeve, P. V. Samuelson and P. Hamilton.

Positive Rail Anchor Company, Marion, Ind.—Rail anchors, girder type guard rail brace and plate, guard rail. Represented by Arnold H. Told and L. C. Ferguson.

Q. & C. Company, New York City—Rail joint, guard rail clamps, snow melting track device, rolled steel step or compromise joint, derails, rail bender and car replacers. Represented by L. T. Burwell, J. L. Terry, R. J. McComb and Louis Thomas.

Ralo Supply Company, New York City—Track mover.

Rail Joint Company, The, New York City—Standard, compromise, frog and switch joint, insulated rail joints. Represented by W. S. Boyce, Alex. Chapman, Charles Jenkinson, R. W. Payne, G. T. Willard, J. N. Mead and C. B. Griffin.

Railroad Supply Company, Chicago—Tie plates. Represented by H. G. Van Hostrand, E. P. Gowing and R. H. Bell.

Railway Review, Chicago—Copies of paper. Represented by W. M. Camp and C. L. Bates.

Ramapo Iron Works, Hillburn, N. Y.—Manganese switch point, rolled steel double-shoulder switch slide plate, special switch slide plate, ¾ in. by 7 in. machined heel plate, switch stands, guard rail clamps. Represented by Thomas E. Akers, J. B. Strong, Robert J. Davidson, Jr., and W. C. Kidd.

Reade Manufacturing Company—Motion pictures showing application of weed exterminator. Represented by R. H. Bogle.

Reading Specialties Company, Reading, Pa.—Guard rail clamps, rail benders and rerailers with clamps, compromise joints. Represented by J. J. O'Connell and J. N. Lee.

Ruby, E. L., Philadelphia, Pa.—Portable rail milling machine. Represented by E. L. Ruby.

Sellers Manufacturing Company, Chicago—Anchor-bottom, wrought-iron tie plates. Represented by G. M. Hogan, R. A. Van Houten and T. D. Crowley.

St. Louis Frog & Switch Company, St. Louis, Mo.

Simmons-Boardman Publishing Company, Chicago—Copies of Railway Maintenance Engineer and *Railway Age*. Represented by E. T. Howson, W. S. Lacher, B. J. Wilson, M. Moore, R. H. Smith and J. M. Rutherford.

Templeton, Kenly & Co., Ltd., Chicago—Track jacks. Represented by H. B. Burlow and L. S. Allen.

Track Specialties Company, New York City—Guard rail clamp, compromise rail joints, tie plates and rail braces, guard rail brace adjustable track shim, side plate and switch brace, rail joints, anchor plate. Represented by J. A. Bodkin.

Union Switch & Signal Company, Swissvale, Pa.—Insulated rail joint. Represented by J. J. Cozzens.

U. S. Switch Company, Eau Claire, Wis.—Model of automatic switch lock. Represented by J. W. Hubbard.

Verona Tool Works, Pittsburgh, Pa.—Track tools, track jacks, levels, gages, nut locks, rail joint spring and bonding strips and portable milling machine. Represented by H. C. Mull, E. L. Ruby, L. Woodings and A. T. Palmer.

Wambaugh, M. W., St. Louis, Mo.—Model of steel I-beam track tie. Represented by M. W. Wambaugh.

Wharton, Jr., & Co., Inc., William, Easton, Pa.—Guard rail clamps, insulated switch rod and seamless steel cylinders for oxygen and hydrogen gas. Represented by H. F. McDermott, Charles M. Griffith and V. Angerer.

Werner Machine Company, West Allis, Wis.—Spike straightener. Represented by A. W. Tabert.

Woolery Machine Company, Minneapolis, Minn.—5-hp. hand-car motor. Represented by H. E. Woolery.

Wyoming Shovel Works, Wyoming, Pa.—Track shovels. Represented by H. T. Potter, Lou Braden and G. E. Geer.

Exhibits at Chief Interchange Car Inspectors' and Car Foremen's Association

The companies represented in the Chief Interchange Car Inspectors' and Car Foremen's Supply Men's Association held an exhibit in connection with the convention of the railroad organization in the Hotel Windsor, Montreal, P. Q., September 14-16. The companies exhibiting, the products shown and the representatives are listed below:

American Brake Shoe and Foundry Company, Chicago.—Brake shoes for freight and passenger service.

American Steel Foundries, Chicago.—Davis steel wheels, truck side frames, bolsters, draft arms, brake beams, steel casings and clasp brake. Represented by J. H. Tinker.

Bettendorf Company, Bettendorf, Ia.—Truck side frames, bolsters, underframes and freight cars. Represented by J. Brady.

Boss Nut Company of Canada, Montreal, P. Q.—Lock nuts. Represented by L. E. W. Bailey and F. W. Moore.

Bradford Draft Gear Company, Chicago.—Bradford three-spring draft gear and rocker draft gear. Represented by J. C. Keene and M. J. Miller.

Buckeye Steel Castings Co., Chicago.

Camel Co., Chicago.—Car door fixtures. Represented by H. H. Hendricks.

Canadian Grip Nut Co., Montreal, P. Q.—Grip nuts. Represented by H. C. Harrigan.

Canadian Car and Foundry Co., Montreal, P. Q.—Freight and passenger cars. Represented by H. P. Lamoreux.

Canadian Gold Car Heating and Lighting Co., New York—Steam heat couplings and gaskets, end valves, vapor valves and thermostatic control. Represented by J. O. Brumbaugh and G. E. A. Letourneau.

Canadian Johns-Manville Co., Montreal, P. Q.—Asbestos pipe insulation, steel car insulation, J-M air brake packing cup and expander. Represented by K. E. Munro, J. R. Myles and R. A. Hamaker.

Canuck Supply Co., Montreal, P. Q.—Represented by E. L. Foley and W. H. Robb.

Chicago-Cleveland Car Roofing Co., Chicago.

Chicago Railway Equipment Co., Chicago.—Brake beams. Represented by F. T. DeLong.

Columbia Nut and Bolt Co., Bridgeport, Conn.—Lock nuts and cotters. Represented by H. P. Cook.

Paul Dickinson, Inc., Chicago.—Cast iron smoke jacks for camp and caboose cars, car ventilators. Represented by D. B. Wright.

Duff Manufacturing Co., Fittsburgh, Pa.—Screw and lever jacks. Represented by E. A. Johnson and C. A. Methfessel.

Flower Waste and Packing Co., Bayonne, N. J.—Journal box packing. Represented by F. F. Clair.

Galena Signal Oil Company of Canada, Montreal, P. Q.—Lubricating oils. Represented by J. P. Ferguson, E. Hawker and R. McVicar.

Griffin Wheel Co., Chicago chilled iron car wheels.

Holden Co., Montreal.—Barco flexible joints, Chicago pneumatic tools, Stucki side bearings, weather stripping, pinless brake hanger brackets. Represented by M. J. Miller and H. J. Dyke.

Independent Pneumatic Tool Co., Montreal, P. Q.—Pneumatic and electric drills, electric screwdrivers, pneumatic hammers and hose couplings. Represented by W. H. Rosevear.

Imperial Appliance Co., Chicago.—Coupler carry irons and uncoupling connection. Represented by F. Bergen.

Imperial Belting Co., Chicago.—Fabric belting for transmission, conveying and elevator service. Represented by W. G. Willcoxson.

Liberty Tool Co., Baltimore, Md.—Portable drill presses, rivet heaters, heating torches, holding-on bars and heading attachments. Represented by H. J. Wilson and M. C. Fearrell.

Mahr Manufacturing Co., Minneapolis, Minn.—Oil burners. Represented by H. H. Warner.

McCord & Co., Chicago.—A. R. A. journal box with pinless lid. Represented by F. W. Craig.

W. H. Miner, Chicago.—Friction draft gear, draft gear side castings, coupler yokes, bolster locking center pin, side bearings and lever hand brakes. Represented by W. H. Miner and J. R. Mitchell.

National Malleable Castings Co., Cleveland, O.—National journal boxes, A. R. A. standard couplers, Goodman wrecking hook, and National friction draft gear. Represented by George V. Martin and L. S. Wright.

National Railway Appliance Co., New York.—Represented by W. C. Lincoln.

A. O. Norton, Inc., Boston, Mass.—Ball bearing jacks. Represented by Harry A. Norton, C. J. Bracken and G. R. Law.

Oxweld Railroad Service Co., Chicago.—Cutting and welding torches and pressure regulators. Represented by H. V. Gigandet and R. Rivett.

Pyrene Manufacturing Company of Canada, Montreal, P. Q.—First aid kits, fire extinguishers and fireklok. Represented by J. M. Philion.

Railway Review, Chicago.—Represented by C. L. Smythe.

Robinson Connector Co. and Robinson Connector Company of Canada, New York.—Automatic connectors for freight and passenger service. Represented by Joseph Robinson, J. A. Cameron, J. L. Hagar, W. W. Norcross and J. P. Kenney.

Union Draft Gear Co., Chicago.—Cardwell friction draft gear, Universal cast steel draft arms. Represented by L. T. Canfield, H. Barnard, J. W. Hathaway and W. G. Krauser.

Westinghouse Air Brake Co., Wilderming, Pa.

Exhibitors at the Traveling Engineers' Convention

Eighty-seven of the 102 members of the Railway Equipment Manufacturers' Association were exhibitors at the Hotel Sherman, Chicago, during the convention of the Traveling Engineers' Association held on September 14 to 17, inclusive. The list of the companies, their representatives, and the products exhibited is as follows:

American Arch Co., New York—Represented by J. P. Neff, A. W. Clokey, R. J. Himmelright, W. L. Allison, F. G. Boomer, J. D. Brandon, E. H. Cook, T. M. Ferguson, E. T. Mulcahey, W. W. Neale, T. Mahar, T. Kilcoyne and E. W. Salisbury.

American Flexible Bolt Co., Pittsburgh, Pa.—American flexible bolt, reduced body staybolt, marine hollow bolt, hollow staybolt iron, and rivets. Represented by R. W. Benson, W. F. Heacock, L. W. Widmeier and W. W. McAllister.

Air Reduction Sales Company, New York—Oxy-acetylene welding apparatus and gases. Represented by R. T. Peabody and H. Melville.

American Locomotive Company, New York—Locomotives, Alco reverse gear, throttle lever, trailing truck, lateral motion box, rotary snowplow and flexible staybolt. Represented by G. G. Jones, Arthur Haller, C. O. Rogers and G. P. Robinson.

American Steel Foundries, Chicago—Simplex couplers, Simplex shelf coupler pocket, Economy draft arm and steel side frames. Represented by W. G. Wallace and W. C. Walsh.

Ashton Valve Company, Boston, Mass.—Ashton safety valves, pressure recording gages, locomotive steam and air gages, test gages, dead weight and gage tester, wheel press recording gage and whistles, protected dial gages. Represented by J. W. Motherwell, H. O. Fettinger and J. F. Gettrust.

Baldwin Locomotive Co., Philadelphia, Pa.—Locomotives. Represented by W. H. Evans, F. A. Neely and C. H. Gaskill.

Barco Manufacturing Company, Chicago—Engine tender connections, car steam heat connections, coach yard steam heat connections, freight train departure yard air connections, air reservoir joints, Barco crosshead and shoe, automatic smoke box blower fitting, Barco power reverse gear, roundhouse blower and blow off connections. Represented by F. N. Bard, C. L. Mellor, A. S. Lewis, W. J. Behlke, Jr., F. H. Stiles and F. S. Wilcoxen.

Bigelow, G. F., St. Louis, Mo.—Car replacer. Represented by G. F. Bigelow.

Bird-Archer Company, New York—Blow off valve, water chemicals, polarized locomotive compound, anti-foaming compound and furnace cement. Represented by L. F. Wilson, C. W. McGurn, C. J. McGurn and J. L. Callahan.

Boss Nut Company, Chicago—Boss lock nuts, bolts and rivets. Represented by J. A. MacLean, J. W. Fogg, G. A. MacLean and A. W. MacLean.

Bradford Draft Gear Company, Chicago—Rocker type draft gear. Represented by H. C. Priebe and W. A. McWhorter.

Buda Company, Chicago—Model G. W. headlight equipment. Represented by H. P. Bayley, M. A. Ross, W. F. Davis and E. E. Eberhardt.

Chamber Valve Company, New York—Throttle valve. Represented by F. H. Clark.

Chicago Pneumatic Tool Company, Chicago—Pneumatic tools, electric drills and Boyer speed recorder. Represented by C. W. Cross, R. C. Black, John D. Crowley, James L. Crowley, C. E. Lowrenz, J. L. Canby and T. J. Hudson.

Commonwealth Supply Company, Richmond, Va.—Lewis power reverse gear. Represented by S. H. Lewis and J. M. Perdue.

D & M Cleaning Process, Chicago—D & M cleaning process. Represented by F. M. Hilgerink.

Dearborn Chemical Company, Chicago—Water treatment for locomotive boilers. Represented by G. R. Carr, J. D. Purcell, W. S. Reid, I. L. Beebe, O. H. Rehmeyer, I. H. Bowen, L. P. Bowen, C. H. Everett, C. S. Murray, J. F. Roddy, H. Ross and J. Arn.

Detroit Lubricator Company, Detroit, Mich.—Three-feed Detroit standard lubricator with transfer filler attachment, one U. S. standard three-feed lubricator and Detroit automatic flange oiler. Represented by A. G. Machesney.

Double Seal Ring Company, Chicago.—Double Seal piston rings. Represented by C. B. Toppan.

Duff Manufacturing Company, Pittsburgh, Pa.—Jacks for trucks, cars, etc., and high speed ball bearing screw jacks. Represented by C. N. Thulin.

Edna Brass Mfg. Company, Cincinnati, Ohio—Lubricators, injectors, water glasses, coal sprinklers, boiler checks, line checks, locomotive appliances. Represented by E. O. Corey and H. A. Glenn.

Electric Service Supplies Company, Philadelphia, Pa.—Locomotive headlight equipment. Represented by J. W. Porter, M. A. Burg, L. J. Kirby, T. M. Childs and B. D. Barger.

Elvin Mechanical Stoker Company, New York—Stoker drawings. Represented by John S. Yardley.

Flannery Bolt Company, Pittsburgh, Pa.—F. B. C. flexible staybolt universal sleeve, Tate flexible staybolt. Represented by W. M. Wilson and E. I. Dodds.

Franklin Railway Supply Company, New York—Franklin butterfly fire door, Franklin lateral preventer, buffer, locomotive booster, No. 9 firebox door, power grate shaker, automatic driving box lubricator, automatic driving box wedge, Economy engine truck, tender truck, McLaughlin flexible joints, Unit safety bar, Universal valve chest, Ragonnet power reverse gear. Represented by J. L. Randolph, C. W. F. Coffin, J. L. Bacon, H. F. Ball, W. H. Coyle, R. F. de Mott, H. M. Evans, T. L. Reed, S. D. Rosenfelt, J. Sinkler, P. Weiler and P. Willis.

Fuller Engineering Company, Fullerton, Pa.—Photos and literature on pulverizer mill. Represented by W. H. Searight.

Galena-Signal Oil Company, Franklin, Pa.—Represented by C. McNair, W. J. Walsh, W. F. Walsh, D. L. Eubanks, A. J. Poole, C. B. Royal, J. E. Linahen, J. A. Graham, B. P. Corey, W. L. Trout, F. Smith, R. E. Webb, P. H. Stack, W. O. Taylor, M. M. Meehan, J. S. Brown, G. W. Buckpitt, A. J. Hawley, G. E. McVicar, L. H. Palmer, L. G. Sprague, A. J. Harner, D. J. Justro, I. T. Burney and J. W. Burnn.

Garlock Packing Company, Palmyra, N. Y.—Packings. Represented by C. W. Sullvan and S. MacDole.

Garrett-Callahan Company, Chicago—Magic boiler preservative. Represented by A. H. Hawkinson, W. Rollinson, J. G. Barcley and George J. Clyde.

Gill Railway Supply Company, Peoria, Ill.—Hot box cooling compound. J. Q. Gill, S. S. Pinkney, E. H. Hartenstein and William O'Brien.

A. W. Gillespie & Company, Chicago—Economy locomotive fire door. Represented by A. W. Gillespie, J. S. Seeley and E. H. Bauer.

Hanna Locomotive Stoker Company, Cincinnati, O.—Locomotive stokers. Represented by W. T. Hanna, W. A. Benson and F. E. McCown.

Gold Car Heating & Lighting Company, New York—Car heating appliances, reducing valves for locomotives for car heating purposes, thermostatic control apparatus, electric heaters and ventilators. Represented by Allen Sheldon and A. D. Stuver.

Hattiesburg Valve Stem Packing Company, Hattiesburg, Miss.—Valve stem and packing. Represented by J. W. Dyess.

Hauck Manufacturing Company, Brooklyn, N. Y.—Hauck burners and thawing outfits. Represented by G. A. Nelson.

Hoofer Manufacturing Company, Chicago.—Pneumatic flange oiler. Represented by Charles F. Hoofer.

Hulson Grate Company, Keokuk, Iowa—Locomotive grate. Represented by A. W. Hulson and J. W. Hulson.

Hunt-Spiller Manufacturing Corporation, Boston, Mass.—Piston valve bushings, piston valve packing, piston valve bull rings, cylinder packing, crosshead shoes, driving box shoes and wedges, knuckle pin bushings, side rod bushings, cylinder bushings, pistons and piston bull rings. Represented by J. G. Platt, V. W. Ellet, E. J. Fuller, C. Galloway and F. Hartman.

International Correspondence Schools, Scranton, Pa.—Correspondence courses. Represented by E. M. Sawyer, H. T. Pottinger, C. Z. Meyers, F. S. Powell and J. W. Harding.

Imperial Belting Company, Chicago—Power transmission and conveyor belts. Represented by A. G. Pickett, W. D. Otter and E. H. Willard.

Jenkins Bros., New York—Valves and packing. Represented by George Royal.

H. W. Johns-Manville & Company, New York—Air pump and throttle packing, industrial and brake cylinder packing sets, insulation for pipes, boiler and locomotive lagging and brake slack adjuster. Represented by J. E. Meek, J. C. Younglove, P. C. Jacobs, P. R. Austin, L. S. Wilbur, H. M. Butters, G. Christenson, J. H. Trent, H. Flannagin and W. J. Stewart.

The Leslie Company, Lyndhurst, N. J.—Pressure regulators and removable coupling nuts. Represented by S. I. Leslie and J. J. Cizek.

Lewis Valve Company, New York—Lewis automatic drifting valve. Represented by F. M. Patterson.

Liberty Steel Products Company, Inc., Pittsburgh, Pa.—Davis solid truss brake beam, Liberty built-up brake beam for freight and passenger cars, Rees car and journal jacks. Represented by S. W. Midgley, J. M. Borrowdale, W. E. Fowler, Jr., and A. W. Preikschat.

Lima Locomotive Works, Inc., Lima, Ohio—Photographs of latest types of locomotives. Represented by M. K. Tate and W. E. Woodard.

Locomotive Appliance Company, Toledo, Ohio—Loco sleeve valve and steam chest. Represented by C. J. Pilliod.

Locomotive Feed Water Heater Company, New York—Diagram of feedwater heater and pump on a locomotive. Represented by W. L. Allison, E. A. Averill, W. H. Lovekin and H. V. Jones.

Locomotive Firebox Company, Chicago—Nicholson thermic syphons for locomotive fireboxes. Represented by J. L. Nicholson, Leslie R. Pyle, C. M. Rogers and J. T. Anthony.

Locomotive Lubricator Company, Chicago—Schlacks' system of force feed lubrication for locomotive valves and cylinders. Represented by C. W. Rudoph, O. H. Neal and W. J. Schlacks.

Locomotive Stoker Company, Pittsburgh, Pa.—Duplex stokers. Represented by W. S. Bartholomew, J. J. Byrne, O. B. Capps, W. G. Clark, D. F. Crawford, J. J. Hannahan, E. Prouty, L. V. Stevens, H. C. Cale, A. N. Willsie, I. C. Jordan, T. L. Capps, E. Capps, H. C. Woodbridge, H. C. Mastin, H. B. Gardner, C. F. Kahler, P. H. Philbrick, K. M. Stoller, H. Malette, E. R. Funk, C. E. Peterson, F. E. Ainsworth, E. F. Milbank, R. G. Kelley, J. M. Jordan, G. Reid, L. E. Osborne and N. W. Sower.

Locomotive Superheater Company, New York City—Pyrometer for superheater locomotives. Represented by G. E. Ryder, R. R. Porterfield, R. M. Osterman, K. E. Stillwell, G. Fogg, G. E. Crisp, B. R. Bristol, B. G. Lynch, H. Spicer, J. E. Monroe, H. B. Oatley, R. J. Van Meter, F. Schaff, W. Boughton, A. C. Louden, W. A. Buckbee, B. Browne, A. C. McLaughlin, C. Wickham, W. Tawse, H. C. Bell and G. L. Dolan.

Long, Chas. R., Jr., Company, Louisville, Ky.—Railway paints, locomotive black varnish, Staybrite front end paint, Lo-kost front end paint, Lovico process freight car paints, passenger car and locomotive enamels. Represented by Harry Vissering, G. S. Turner, W. H. Heckman, A. G. Hollingshead and J. M. Monroe.

Manning, Maxwell & Moore, New York—Ashcroft Manufacturing Co. gages, Hancock inspirator, Hancock boiler tester, boiler checks, appliances, Consolidated safety valve. Represented by Charles L. Brown, J. Soule Smith and C. M. Freeman.

Metal & Thermit Corporation, New York—Thermit and alloys, compounded with chromium, nickel, iron, titanium and manganese; thermit process for pipe welding, thermit welding equipment. Represented by W. H. Moore, H. S. Mann and C. D. Young.

W. H. Miner, Chicago—Draft gears, side bearings, friction buffers and ratchet brakes. Represented by J. R. Mitchell, G. Q. Lewis, George A. Johnson and B. S. Johnson.

Nathan Manufacturing Company, New York—Injectors, lubricators, boiler checks, gage cocks, water gages, boiler washer and tester. Represented by O. Best, W. R. Walsh, W. E. Brumble, J. Lemley, F. C. Davern and R. Welsh.

National Boiler Washing Company, Chicago—National hot water locomotive boiler washing system. Represented by D. Anderson.

National Malleable Castings Company, Cleveland, Ohio—Couplers, hand brake apparatus, coupler pockets and journal boxes. Represented by G. R. Rasmussen, C. H. Krakan and T. W. Aishton.

National Railway Devices Company, Chicago—Shoemaker vertical fire doors. Represented by Jay G. Robinson, E. J. Gunnison and A. F. Lind.

National Tube Company, Pittsburgh, Pa.—National pipe and tubes. Represented by Geo. N. Riley, B. J. Conrath, J. T. Goodwin and R. J. W. Kelly.

New York Air Brake Company, New York—Represented by G. Kleifges, W. J. Elliot, H. Yohn, W. Owens, N. A. Cambel and L. W. Sawyer.

Ohio Injector Company, Chicago—Chicago lubricator, flange oiler, non-lifting injector, U. S. Standard special B injector, automatic drifting valve, Ohio water glass protector, and lifting injector. Represented by A. C. Beckwith, F. W. Edwards, W. S. Furry, W. H. Malone and F. B. Farnsworth.

Okadee Company, Chicago—Okadee front end hinge, locomotive blow-off valves, tender hose couplers, automatic cylinder cocks, water gage, water glass protector and round house washout valves. Represented by A. G. Hollingshead, G. S. Turner, W. H. Heckman, F. G. Zimmerman and J. M. More.

O'Malley-Beare Valve Company, Chicago—Multiplate valves, Perfection self-grinding gage cocks, water glass drains, special locomotive valves, engine bearings. Represented by T. O'Malley, E. O'Malley, J. E. Brown, J. N. Gallagher, Jas. M. Pigott, F. Hitesman and W. Morris.

Paxton-Mitchell Company, Omaha, Neb—Paxton-Mitchell piston rod packing and air pump packing. Represented by J. L. Paxton, E. L. Choolman and J. J. Keliher.

Pyle-National Company, Chicago—Cast headlight cases with blown glass reflectors, K.2-generator, E.2-generator, 1450 lampstand, Young valve gear, 32 U. and 33 E. connectors, type "M" d.c. turbo-generator and a.c. turbo-generator. Represented by J. W. Johnson, W. Smith, J. Reese, C. LeFevre, R. L. Kilker, T. P. McGinnis, C. P. McGinnis, G. Haas, A. R. Allen and R. L. McIntosh.

Pilliod Company, Swanton, O.—Baker valve gear. Represented by E. J. Barnett, W. H. Bellmain, Frank Fisher, K. J. Eklund and R. H. Weatherly.

Railway Review, Chicago—Represented by J. L. Lammedee and A. E. Hooven.

Sargent Company, Chicago—Ironclad water glass protector, Sargent safety water gage, E. S. E. reflex gage, E. S. E. water glass cocks, Renn gage cock, Loodige quick acting valves, E. S. E. automatic feed grease cup, grease plug and water columns. Represented by G. S. Garren.

Simmons-Boardman Publishing Company, New York City—*Railway Age*, Railway Mechanical Engineer. Represented by C. B. Peck, J. M. Rutherford and B. W. Meisel.

Sellers, Wm., & Company, Inc., Philadelphia, Pa.—Injectors and special feed water devices. Represented by P. E. Raymond and J. R. New.

Smith Locomotive Adjustable Hub Plate Company, Chicago—Adjustable locomotive hub plate. Represented by A. J. Sams.

Southern Valve Gear Company, Knoxville, Tenn.—Southern valve gear. Represented by R. M. Cook and H. A. Kibby.

Standard Stoker Company, New York—Locomotive stokers. Represented by J. A. Carey, H. L. Walker, C. T. Hansen, H. R. Warnock, F. P. Roesch, Frank Hopper and J. L. Thompson.

Sunbeam Electric Manufacturing Company, Evansville, Ind.—Headlight with switch lens and special lens for diffusing light on yard and switch engines. Represented by J. H. Schroeder, A. H. Varney, C. E. Kinnaw and E. W. Edmunds.

Swain Company, Chicago—Grease lubricants and cups for shafting, grease lubricator for car journal boxes. Represented by T. J. Holmes and J. H. Wise.

Torchweld Equipment Company, Chicago—Welding and cutting apparatus. Represented by W. A. Slack, H. R. Fenstemaker, R. B. Scharff and Geo. Smedley.

United States Metallic Packing Company, Philadelphia, Pa.—King type single and tandem piston packing, air pump packing. Represented by M. B. Brewster, H. E. Hyslop, L. B. Miller, J. Luscombe, Frank Orland, R. R. Wells and J. S. Mace.

Universal Packing & Service Company, Chicago—Spring journal box packing. Represented by L. Rowe, J. P. Landreth, Walter M. Gibbs and G. H. Green.

Vapor Car Heating Company, Chicago—Locomotive cab heating arrangement, pressure reducing valves, steam gages, traps and metallic straight port steam joints. Represented by E. C. Post and H. F. Burns.

Vincent-Nagel Appliance Company, Chicago—Drain valves and grease cups. Represented by Frank Gilliland.

Vissering, Harry, & Co., Chicago—"Velco" and "Leach type" sanders, Crescent metallic piston rod and valve stem packing, duplex engine valves, bell ringers and locomotive cylinder head crane. Represented by G. S. Turner, J. M. Monroe, W. H. Heckman, Harry Vissering and F. G. Zimmerman.

Western Railway Equipment Company, St. Louis, Mo.—Linstrom syphon, Western M. C. B. malleable iron journal wedge and Security dust guard. Represented by R. M. Hoerr, R. L. Langtim and S. H. Campbell.

Westinghouse Air Brake Company, Pittsburgh, Pa.—H.-6 brake valve with collapsible equalizing piston, No. 4 brake pipe vent valve, M. C. B. hose couple gage, hose coupling packing ring gages, triple valve shipping caps, auxiliary devices governor, freight brake cleaners and testing outfit, brake cleaning tools, air compressor strainer. Represented by W. S. Bartholomew, C. J. Ohlmstead, J. S. Y. Fralich, J. B. Wright, L. Wilcox, L. M. Carleton, A. K. Hohmyer, F. H. Parke, A. L. Berghane, W. Sleet, A. G. Houston, H. H. Burns, J. C. McCune and F. B. Johonson.

White American Locomotive Sander Company, Roanoke, Va.—"Graham-White" sander, "Loco" sander. James Frantz and W. L. Ranson.

The following are the officers elected by the Railway Equipment Manufacturers' Association to serve for the coming year: President, D. L. Eubank, Galena Signal Oil Company; vice-president, F. W. Venton, Crane Company; secretary, R. J. Himmelright, American Arch Company, and treasurer, M. P. Brewster, U. S. Metallic Packing Company. R. W. Ellet, Hunt-Spiller Company; J. W. Fogg, Boss Nut Company, and George Haas, Pyle National Company, were elected members of the Executive Committee to serve for three years.

Traffic News

Members of the Transportation Club of Louisville (Ky.) were the guests of the Standard Oil Company of Kentucky on September 24, when an inspection was made of that company's new riverside refinery.

The Chicago & North Western has re-established its own ticket offices in Milwaukee, Wis., and Sioux City, Ia. The consolidated ticket office at Milwaukee has been discontinued, while the company has withdrawn from this office at Sioux City. The North Western has also opened an office at Toronto, Ont.

J. M. O'Day, superintendent of transportation of the Sinclair Refining Company, has been appointed general traffic manager, effective September 3, succeeding F. S. Gibons, who has resigned on account of ill health. W. C. Steffans succeeds Mr. O'Day, with headquarters in the Conway building, Chicago.

Improved conditions at terminals are reported by all Western railroads as a result of the return of many veteran switchmen who have been on strike since last April. The "outlaw" movement was definitely ended on September 13 and many former switchmen who were engaged in other industries returned to railroad service. Material progress in cleaning up the car accumulations is now expected.

Officers of the Chicago, Milwaukee & St. Paul, the Great Northern, the Northern Pacific, the Union Pacific, and the Seattle, Portland & Spokane, as well as the Industrial and agricultural representatives of the systems attended the irrigation and development conference held at Seattle, Wash., under the auspices of the Chamber of Commerce of that city, on September 16 and 17. The colonization agents of the railroads interested presented exhibits in the Forestry building.

Fred Larkins, who has been assisting the directing manager in organizing the forces and other details of the American Wholesale Lumber Association since that organization was formed on May 20, 1920, has been appointed assistant secretary of the association. He will be in charge of the Arbitration and the Traffic departments and in connection with the latter department will direct the policy of the Association in seeking elimination of the $10 a day penalty charge on lumber and other forest products.

The Northern Pacific announces the establishment of a new department of immigration and industry to co-operate with federal and state authorities, agricultural colleges, farm bureau organizations, county agents, farmers' clubs and other agencies in promoting the development of the northwest. E. F. Benson, now commissioner of agriculture of the state of Washington, is to be manager with headquarters at St. Paul, Minn. Mr. Benson has railroad experience and is an authority of international repute on immigration and reclamation work.

Freight Commodity Statistics

The Interstate Commerce Commission has issued a summary of freight commodity statistics of Class I roads for the quarter ending March 31, the first compilation under the order of the commission of December 1, 1919, prescribing a new classification of commodities and requiring quarterly reports. It analyzes by classes of commodities the tons and numbers of carloads. In former summaries of revenue tonnage the analysis included but 38 classes of commodities, while the present one deals with 70. During the quarter the revenue freight originating amounted to 8,007,435 carloads (275,931,603 tons) and the total revenue freight carried was 15,115,677 carloads (511,699,501 tons). There are no comparisons with previous years.

Contracts for Airplane Mail Service

The Postoffice Department announces that contracts amounting to $685,000 a year have been let for the transportation of mail by airplane. The contractor is the Lawson Air Line Company of

Chicago. The contracts call for service from Pittsburgh to St. Louis by way of Columbus, Cincinnati and Indianapolis, at $147,000 a year; between New York and Chicago, via Harrisburg, Pittsburgh and Fort Wayne, for $238,000 a year, and for service between New York and Atlanta, via Washington, Raleigh and Columbia, at a cost of $300,000. The first service will start between Pittsburgh and Indianapolis in November. The contract provides that each plane must carry 1,500 lb. of mail. In addition the contractor announces that accommodations will be provided for 16 passengers, the latter end of the business being a private venture. Three hundred and six round trips are to be made yearly on each route.

Coal Production

The total output of soft coal for the week ending September 11 is estimated at 10,566,000 net tons, according to the weekly bulletin of the Geological Survey, a decrease as compared with the preceding week of 605,000 tons, attributed to the Labor Day holiday. The observance of the holiday, however, acted to improve the car supply on the remaining working days of the week and the average rate per day worked rose to 1,994,000 tons, the largest attained in any week since last January. Production during the first 217 working days of the year was 369,143,000, which is 42⅓ million tons less than for 1918, but 50¾ million tons ahead of 1919. Judged by the test of production, the bulletin says, the anthracite strike closed about 70 per cent of the capacity of the anthracite region of Pennsylvania during the week. The estimated production for the week was 546,000 tons and for the calendar year to date 59,160,000. For the week ended September 4 the bulletin reports a slight reaction in the progress recently made toward improved car supply at the mines. Transportation disability became again overwhelmingly the dominant factor limiting production. Losses attributed to transportation averaged 27.4 per cent.

The Labor Day holiday cut heavily into both dumpings at the lake ports and shipments from the mines for lake account. The total tonnage dumped into vessels at Lake Erie was 884,989 net tons, a decrease of 18 per cent. The cumulative lake movement from the opening of the season now stands at 12,969,000 tons as against 19,255,000 in 1918, and 17,255,000 in 1919. Loadings at the mines for shipment to the lakes increased slightly over the preceding week. Total dumpings at tidewater during the week ended September 11 also showed a decrease due to the observance of Labor Day. However, August established a new record for the tidewater movement. The total dumping at the four North Atlantic ports and Charleston is reported as 5,352,000 net tons, an increase over July, hitherto the maximum, of 437,000 tons. Shipments of cargo coal to New England increased slightly, amounting to 1,048,000 tons. Exports rose to a new record, 2,295,000 net tons. A recovery during the week of September 11 again carried the movement of bituminous coal by rail through the New England gateways above the level of 1919.

The Geological Survey, the Bituminous Coal Commission and the Council of National Defense have issued a joint statement estimating the commercial stocks of bituminous coal in the United States on June 1 at 20,000,000 net tons, considerably less than the stocks carried on October 1 of the years 1916 and 1917 and very much less than the stocks accumulated at the close of 1918. In the three months from March 1 to June 1 stocks decreased 4,000,000 tons. A statement giving an estimate of the supply of soft coal in the hands of various classes of consumers places the railroad fuel supply as enough for one week and three days at current rate of consumption. Stocks of railroad fuel were far below those held by the railroads at any time during the last four years, the period over which the records extend. The decrease was most marked in the Eastern district, particularly New England. The statement says that the depleted stocks of railroad fuel are significant because they indicate that the roads may have to confiscate coal or assign cars freely, measures which necessarily interfere with regular deliveries to other consumers. On January 1, 1919, according to the table, the railroads had a supply adequate for four weeks and six days.

Foreign Railway News

New Railways for French West Africa

LONDON.

The Board of Trade Journal states that the French West African Government is authorized, under a law of August 12, to contract for a loan of 167,000,000 francs ($22,000,000, present rate of exchange) for the construction of railways and improvement of port works in the French West African colonies.

Roumanian Railways Short of Rolling Stock

LONDON.

A news item in Modern Transport states that the Roumanian railways are suffering from a serious shortage of locomotives and rolling stock and large numbers are on hand awaiting repairs. With a view to the installation of plant for the carrying out of the necessary repairs, Roumania has approached Germany, and, according to reports, the Overstein and Koppel Actiengesellschaft is engaged at the present time in drawing up plans for the erection of large locomotive shops in Roumanian territory.

Coal Production in Devastated Areas of France

LONDON.

A report in the Board of Trade Journal states that the production of the coal mines of the western basin of the Pas-de-Calais for the months of June and July, after making allowance for wastage in sorting and washing, amounted to 736,600 and 747,000 tons, respectively. This shows an increase of 322,200 tons over the production for the month of May. The production of the mines in the Department du Nord for the months of June and July was 146,010 and 176,154 tons, respectively, after making allowance for consumption at the mines and loss by sorting and washing.

Electrification of Brazilian Railroads

Consul A. T. Haeberle, Rio de Janeiro, in writing to Commerce Reports, quotes a report which appeared in the Jornal do Commercio of Rio de Janeiro on July 14, 1920, to the effect that the Commission of Finance of the Federal Congress of Brazil has signed the proposal of Sampaio Correa regarding the electrification of some lines of the Estrada Ferro Central do Brazil, a government-owned railroad. The following resolution was unanimously adopted: The executive committee has been authorized to open a credit of about $11,000,000 to cover the cost of changing the railroad system from steam to electricity on the suburban lines from the central station in Rio de Janeiro to the following stations: Deodoro, Barra do Pirahy, Santa Cruz, Paracamby and Maritima. The executive committee is also ordering the plans for the prolongation of some or all lines to the center of the city, if possible to the Praca Mauá, having authorized the opening of the necessary credit, if the project is approved by the prefect of the federal district.

Electrification of Italian Railways

According to an announcement in the Weekly Bulletin of the Canadian Department of Trade and Commerce, a new government decree, substituting the one published last August, unfolds the lines along which the electrification of the Italian railways is to take place. In short, the scheme as now outlined includes the electrifying of 2,750 miles and the laying of 6,070 miles of new rails. The plan calls for (1) the immediate electrifying of 803 miles and the laying of 1,780 miles of rails; (2) the electrifying of 635 miles and the laying of rails over 1,410 miles in the period immediately following the execution of the first group; (3) the electrifyiyng of 1,080 miles and the laying of rails over 2,640 miles by private industry; and (4) the electrifying of 158 miles and the laying of rails over 242 miles, in which group experiments will be made with new methods of electric traction. The government for this work has apportioned about $154,000,000 to be distributed over eight periods, about $11,600,000 to be expended in the current financial year.

Equipment and Supplies

Locomotives

THE GULF COAST LINES are inquiring for 3, 4-6-0 type locomotives.

THE ST. LOUIS SOUTHWESTERN is inquiring for 10 Consolidation type locomotives.

THE NEW YORK CENTRAL is having repairs made to 13 locomotives at the Brooks works of the American Locomotive Company.

THE BALTIMORE & OHIO, reported in the *Railway Age* of July 2 as inquiring for 50 Mikado type locomotives, has ordered this equipment from the Baldwin Locomotive Works.

THE WESTERN MARYLAND, reported in the *Railway Age* of August 6 as inquiring for 20 locomotives for freight service, has ordered this equipment from the Baldwin Locomotive Works and may increase the order to 40 locomotives.

THE STANDARD OIL COMPANY OF NEW YORK has ordered one four-wheel tank locomotive from the American Locomotive Company. This locomotive will have 16 in. by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE LAKE SUPERIOR PAPER COMPANY, Sault Ste. Marie, Ontario, has ordered from the American Locomotive Company one six-wheel tank locomotive, with 19 in. by 24 in. cylinders and a total weight in working order of 123,000 lb.

THE FOUNDATION COMPANY, Atlanta, Ga., has ordered one Mogul type locomotive from the American Locomotive Company. This locomotive will have 16 in. by 24 in. cylinders and a total weight in working order of 85,000 lb.

MITSUI & Co., 65 Broadway, New York, reported in the *Railway Age* of August 27 as being in the market for 3 Consolidation type locomotives and 3 Pacific type locomotives for the Shantung Railway, have ordered 3 Consolidation and 4 Pacific type locomotives from the American Locomotive Company.

Freight Cars

THE GREAT NORTHERN is asking prices on 400 refrigerator cars.

THE FLORIDA EAST COAST is inquiring for 10, 8-wheel caboose cars.

THE EL PASO & SOUTHWESTERN is inquiring for 75, 10,000-gal. tank cars.

THE ATLANTIC COAST LINE is inquiring for 100 phosphate cars of 50 tons capacity.

THE RHODESIAN RAILWAYS are inquiring for 100 high side gondola cars of 43 tons' capacity.

THE UNION RAILROAD will convert 450 high side all steel 50-ton capacity cars to low side gondolas.

THE BALTIMORE & OHIO has ordered 215 hopper cars of 50 tons capacity from the Pressed Steel Car Company.

FOX BROTHERS & Co., 126 Lafayette street, New York, are inquiring for 15 tank cars of from 2,500 to 4,000 gal. capacity for export.

THE CHAMPLIN REFINING COMPANY, Enid, Okla., has ordered 100 tank cars of 8,050 gal. capacity, with 40-ton trucks, from the Pennsylvania Tank Car Company.

THE NATIONAL LAMP COMPANY, Cleveland, Ohio, has ordered 8 tank cars of 8,050 gal. capacity, with 50-ton trucks, from the Pennsylvania Tank Car Company.

THE PITTSBURGH CRUCIBLE STEEL COMPANY, Pittsburgh, Pa., has ordered 25, 70-ton hopper cars, and 10, 50-ton gondola cars, from the Pressed Steel Car Company.

THE CENTRAL ARGENTINE RAILROAD, reported in the *Railway Age* of September 10 as inquiring for 194 four-wheel cars, of 20 tons capacity, has ordered this equipment in England.

THE MAINE CENTRAL is inquiring for 300, 40-ton box cars; 150, 40-ton rack cars; 50, 50-ton general service cars; and 50, 50-ton gondola cars. All of these cars are to be equipped with steel underframes.

THE INDIAHOMA TANK CAR COMPANY, Tulsa, Okla., reported in the *Railway Age* of September 17 as inquiring for 50 tank cars of 10,000 gal. capacity, with 50-ton trucks, has ordered this equipment from the Standard Tank Car Company.

THE CENTRAL OF GEORGIA, reported in the *Railway Age* of July 9 as inquiring for 500 ventilated box and 300 gondola cars, is now inquiring for 500 ventilated box cars of 40 tons' capacity, 200 flat-bottom cars of 50 tons' capacity and 100 stock cars of 40 tons' capacity.

Passenger Cars

THE LOS ANGELES & SALT LAKE is inquiring for 6, 69-ft. steel baggage cars equipped with turbo-generator system; also for 2, 69-ft. steel baggage cars without generators; 2, 60-ft. steel baggage cars without generators, and 8 steel chair cars with smoking room.

SPAIN.—Commerce Reports, published by the Bureau of Foreign and Domestic Commerce, in a recent issue, gives the following trade opportunity:

A railway company in Spain desires to receive catalogues, prices and specifications for the purchase of 5 railway coaches, accommodating 90 passengers, equipped with gasoline or benzine engines capable of driving cars at a speed of approximately 50 miles per hour. These cars are for operation over a railroad having a gage of 914 millimeters. Also, 5 coaches without power units, to be used as trailers. The cars must be luxuriously appointed, with best of springs and trucks, have a heating system on the thermosyphon principle, and be electrically lighted throughout. Interior seating arrangement must provide a center aisle, with upholstered seats facing forward and reversible. Quotations should be given c. i. f. Spanish port. Correspondence should be in Spanish. Cash to be paid. Reference.

Iron and Steel

SOPHUS BERENDSEN, 15 Broad street, New York, is inquiring for from 20,000 to 30,000 tons of rails of 70, 80 or 100-lb. sections and the necessary accessories, for export.

Signaling

THE ILLINOIS CENTRAL has authorized the installation of automatic block signals on 20 miles of road, single track, between Princeton, Ky., and Ilsley.

TRANSPORTATION IS A NATIONAL MATTER.—There are various ways of developing new forms of transportation by earth, air and water, but primarily the railroads must be relied upon. This means that obstructions should be removed and every facility provided for enlarging the equipment and the trackage of the roads everywhere. A general policy of helpfulness must be adopted, a policy of fostering instead of repressing. The farmers need it; the miners need it; the industrial workers need it; the commercial workers need it; the homekeepers need it; the whole country needs it regardless of distinctions of class or employment. Rescuing the railroads from their present congested and inefficient condition and supplementing them with development of other means of transportation is not exceeded in importance by any domestic need.—*St. Louis Globe-Dispatch.*

Supply Trade News

Morton C. Andrews, vice-president of the **Unit Construction Company,** St. Louis, Mo., died at Fall River, Mass., on August 9.

Agnew T. Dice, Jr., railroad sales manager of the **Reading Iron Company,** Reading, Pa., has been placed in charge of the cut nail business of the company.

Benjamin M. McDade, formerly sales manager of the Detroit Red Lead Works, Detroit, Mich., has become associated with the railway sales department of the **Sherwin-Williams Company,** with headquarters at Detroit, Mich.

L. R. Day has succeeded **W. E. Allison** as representative in the railroad department of the Western Electric Company at Milwaukee, Wis. **E. B. Dennison** has been appointed manager of the new branch office at Nashville, Tenn.

C. E. Neubert, assistant district manager of the Chicago office of the **Warner & Swasey Company,** Cleveland, Ohio, has been promoted to district manager of the company's office in Buffalo, N. Y., to succeed W. E. Marshall, deceased.

The H. K. Ferguson Company, Cleveland, Ohio, has transferred its Indianapolis, Ind., office to the Rookery building, Chicago. **Major O. C. F. Randolph,** who has been district manager at Indianapolis, becomes district manager at Chicago.

Preparations are being made at St. Louis, Mo., for the first annual railway exhibition, which will be held during the week of October 25 under the auspices of the **Railroad Y. M. C. A.** and the **St. Louis Railway Club** at the Railroad Y. M. C. A. building.

J. H. Cain, formerly with the Shore Line Electric Railway Company of Connecticut, has become connected with the **Railway Audit & Inspection Company,** of Philadelphia, Pa., as its general representative for New York State and New England. Mr. Cain's headquarters for the present will be at Philadelphia.

At the annual meeting of the **Canadian Locomotive Company, Limited,** Kingston, Ontario, on September 16, the board of directors was increased by two new members, William Harty, Jr., and William Casey having been elected to the board. The other members of the board were re-elected. J. H. Birkett, formerly secretary and treasurer, is now treasurer and has been succeeded as secretary by William Harty, Jr. William Casey, who was formerly general manager, has been appointed a vice-president. The other executive officers were re-elected.

Dwight P. Robinson & Co., Inc. (with which Westinghouse, Church, Kerr & Co., Inc., was recently consolidated), engineers and constructors, of New York, has established a new branch office in the Home Savings & Loan building, Youngstown, Ohio, in charge of **C. I. Crippen.** The company recently moved its Cleveland office from the Leader News building to the Citizens building, and **H. P. Clawson,** who was for several years a member of the Chicago staff, has been transferred to Cleveland to take charge of this office. The company now maintains branch offices in Pittsburgh, Youngstown, Cleveland, Chicago, Dallas and Los Angeles, and Sao Paulo, Brazil.

W. H. S. Bateman, trading as **W. H. S. Bateman & Co.,** Philadelphia, Pa., who for the past six years has been the eastern representative of the Canton Sheet Steel Company, has severed his connection with that company and has been appointed eastern sales agent of the **Superior Sheet Steel Company,** Canton, Ohio, with offices in the Commercial Trust building, Philadelphia, Pa., and 30 Church street, New York. **Joseph R. Wetherald** will continue as sales manager at the Philadelphia office, and **Richard J. Sheridan** at the New York office. Mr. Bateman will continue as resident sales manager of the **Parkesburg Iron Company** and eastern and southern sales agent of the **Champion Rivet Company,** at Philadelphia.

J. A. Houston, trainmaster on the Dakota division of the Chicago, Rock Island & Pacific, has resigned, effective September 15, to become associated with the **Westinghouse Electric & Manufacturing Company** in the engineering department, where he will handle questions pertaining to the mechanical design of the electric locomotives for heavy freight and passenger service. Mr. Houston was born at Springfield, Mo., in 1886. After receiving the degree of mechanical engineer at Purdue University in 1911, he continued his studies at the University of Illinois, where he specialized in railway mechanical engineering for two years. He entered railway service with the St. Louis-San Francisco as a machinist's apprentice at Springfield, Mo., in 1904. While there he won the Ryerson Scholarship of the American Railway Master Mechanics' Association and in 1907 started on these studies. He continued with the Frisco during his vacations and in 1910 became assistant chief draftsman, handling test matters in the mechanical department. After graduating he entered the mechanical department of the Chicago, Rock Island & Pacific, eventually becoming special engineer on the staff of the general mechanical superintendent. In 1916 he left the mechanical department to enter the operating department as trainmaster on the Dakota division, which position he held at the time of his recent change.

Trade Publications

LOCOMOTIVE SHOPS.—Dwight P. Robinson & Co., New York, consolidated with Westinghouse, Church, Kerr & Co., has issued a folder containing 13 photographs of the Baltimore & Ohio locomotive shops at Glenwood, Pa., and Cumberland, Md., which were built by Westinghouse, Church, Kerr & Co.

TIMBER PRESERVATION.—The Allis-Chalmers Manufacturing Company has reprinted its bulletin No. 1439-B which was issued originally in October, 1916, containing detailed information concerning the treatment of timber by the various processes and the equipment which it makes for that purpose.

THE STORY OF GASOLINE.—In a 40-page pamphlet issued by the Atlantic Refining Company, Philadelphia, many useful and interesting facts concerning the properties of gasoline have been presented in an attractive manner. A chapter on carburization discusses the effect on efficiency and power brought about by variations in the gas mixture. Six pages at the end of the booklet are devoted to a classified list of engine troubles with the remedies.

PRUDENTIAL STEEL BUILDINGS.—The Blaw-Knox Company, Pittsburgh, Pa., has issued a 32-page catalog illustrating and describing the line of portable steel buildings manufactured by that company. There are photographs and short accounts of the use of these buildings for a number of different purposes, including labor camps, field offices, watchmen's shanties, industrial buildings, etc. The latter part of the catalog is devoted to general plans for the various standard structures.

STATIONARY BOILERS.—An interesting and well illustrated 86-page catalog, entitled Boiler Logic, has been issued by the Heine Safety Boiler Company, St. Louis, Mo. It contains a large amount of valuable information regarding boiler design, such as proper mixture of the gases, heat transmission by radiation, by convection and by transmission through the tubes to the water. Practical methods of baffling water tube boilers are described, with emphasis laid on flexibility of design, prevention of leakage, active and inactive surfaces, and ease of cleaning. Illustrations and descriptions are given of Heine boilers arranged for hand firing with bituminous or anthracite coal. Various kinds of stokers, including chain grate, side feed and underfeed stokers, are described. The catalog illustrates different arrangements for burning fuels, including oil, shavings, bagasse and gas. Several pages are devoted to the overloading of boilers and a chart shows the relation between boiler load and excess of flue gas temperature over steam temperature. The last pages of the catalog conconsider the design, construction and methods of shipping of Heine boilers.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company is accepting bids for the construction of a machine shop at Albuquerque, N. M. This shop, which is to be 240 ft. by 604 ft., will be the central structure in a group of six other buildings, including a flue shop, pattern shop, cab painting shop, waste cleaning shop, fire department building and babbitt shop. The construction will cost approximately $2,000,000, and it is understood that the bids will be closed about the last of September.

CANADIAN NATIONAL RAILWAYS.—Plans have been made to build a new bridge at a point 1.4 miles from Salisburg, New Brunswick, over the Petitcodiac river. It will consist of four pony truss spans 104 ft. 7 in. long. Work on the substructure will be carried out by company forces; the contract for erecting the steel spans has not yet been let.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded a contract to D. J. Jobst, Lincoln, Neb., for the construction of a new passenger and freight station at Seneca, Neb. The building will be 24 feet by 100 feet and will be of brick veneer, stucco and tile construction.

This company has awarded a contract to E. J. Claffey & Co., Chicago, for the installation of a complete heating and washout system in the new 16-stall roundhouse now under construction at Galesburg, Ill. It is understood that the work will be completed about December 1.

CHICAGO GREAT WESTERN.—This company is accepting bids for enlarging its passenger station at South St. Paul, Minn. The building will be lengthened approximately 50 feet, and is to be equipped with a complete steam heating plant.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to Peppard & Burrill, Minneapolis, Minn., for the construction of an 840 ft. extension to ore dock No. 3 at Ashland, Wis. The entire construction, including the materials, will cost approximately $1,250,000.

ILLINOIS CENTRAL.—This company expects to complete the construction, of a second track from Clinton, Ill., to Heyworth, Ill., a distance of approximately 8½ miles, about November 1. The cost will be $300,000. The second track, which this company is constructing from Amboy, Ill., to Sublet, a distance of 5½ miles, will also be completed November 1.

This company is extending its yard trackage at Freeport, Ill., at a cost of approximately $175,000.

This company began work September 1 on a frame passenger station at Newbern, Tenn. The structure, which will be 24 feet by 80 feet, will cost approximately $30,000 and will be completed November 15.

OGDEN UNION DEPOT.—This company will make improvements in the railroad yards at Ogden, Utah, at a cost of $1,000,000. The work will include the construction of a new ice manufacing plant of 250 tons daily output, a storage house of 20,000 tons' capacity, and an increase in the trackage in the yards. The new ice plant and storage house will replace and occupy the site of an ice plant which was destroyed by fire. The yard tracks will be extended to the west of the present freight tracks, and the old Union Pacific roundhouse will be removed.

ST. LOUIS-SOUTHWESTERN.—This road plans to spend approximately $5,000,000 within the next 12 months on the improvement of its properties. Among the larger items are, more than $1,000,000 for 21,000 tons of steel rails which will be used to relay 157 miles of track; $755,000 for widening cuts and fills and filling in trestles; $500,000 for ballast (750,000 cu. yd. of washed gravel having already been contracted for); $459,000 for betterments to bridges, trestles and culverts; $300,000 for additional side tracks, and over $170,000 for additions to and enlargement of existing station facilities, water stations, shop buildings, etc. In addition, $1,250,000 will be spent for locomotives, delivery on 21 large consolidation type engines having begun, while $573,000 has been appropriated to improve existing equipment and provide new freight cars.

Railway Financial News

CAPE GIRARDEAU NORTHERN.—The Missouri Public Service Commission has issued an order directing J. W. Fristoe, receiver of this railroad, to resume operations of the line between Cape Girardeau and Jackson, 10 miles, not later than September 27.

CHICAGO & NORTH WESTERN.—This company has applied to the Illinois Public Utilities Commission for permission to issue $10,000,000 in 7 per cent certificates under an equipment trust agreement of 1920, the funds to be used in purchasing additional rolling stock.

DELAWARE, LACKAWANNA & WESTERN.—The plan for the segregation of this company's coal properties is covered in an article in this issue entitled "Lackawanna Proposes a Stock Distribution."

DENVER & RIO GRANDE.—A protective committee to represent the common and preferred stockholders has been formed with Daniel W. Blumenthal, of the law firm of Maurice B. & Daniel W. Blumenthal, 35 Nassau street, New York City, counsel, and Jefferson M. Levy, chairman. The stockholders' protective committee is preparing a petition to be forwarded to the United States District Court at Denver for the purpose of gaining a stay of the hearing on a decree for the sale of the road. The hearing on the decree has been set for September 25.

DETROIT, TOLEDO & IRONTON.—This company has answered the suit of 2 per cent of its security holders to set aside the lease of the line, stating that the road was near bankruptcy when taken over by Henry Ford, and that 98 per cent of the security holders have agreed to the lease.

GULF, MOBILE & NORTHERN.—This company has effected a final settlement with the Railroad Administration of the various accounts arising from federal operation of its property, by which the company agrees that it owes the government a lump sum of $100,000. It was stated at the Railroad Administration that this sum represents a compromise and that it could not be stated exactly to what class of accounts it should be attributed.

ILLINOIS SOUTHERN.—This road, which was declared insolvent and placed in the hands of a receiver in September, 1918, was sold at public auction for $725,000 to the Chicago Clearing House at Salem, Ill., on September 15. The property was bid in by W. B. Abbott, vice-president of the Central Trust Company, Chicago, representing the Chicago Clearing House, which held 90 per cent of the Illinois Southern bonds.

NEWFOUNDLAND.—The Newfoundland Legislature has authorized the loan of $1,000,000 to the Reid Newfoundland Company, which operates the railway on the Island. Even before the war this road was not profitable and the loss on operation for the six years, 1908 to 1913, was $363,057. Passenger and freight rates have been increased, but the deficit for the year 1919 was $645,549. The government program was adopted in the face of considerable opposition. The money will be spent for the purchase of locomotives and freight cars, for a freight house at Port aux Basques, for freight house at St. John's, and to the amount of $300,000 for new fish plates for track in the main line, the fish plates now in use being too weak.

This money is to be regarded as a loan and is to stand as an offset against any claims the company might have at the end of 1951, when the operating contract terminates. Further it is stipulated that it must be expended by a commission of seven persons; the chairman, who is to be an expert American or Canadian railroad executive, three other commissioners to be appointed by the government, and three by the Reid Company. This Board is also to study the general features of the operation of the railway with a view to further measures being taken during the next session. Coal for the locomotives is now costing $12 a ton.

NEW YORK CENTRAL.—The underwriting charge on this company's $25,000,000 bond issue has been approved by the Inter-

state Commerce Commission. See article on another page of this issue.

NEW YORK, NEW HAVEN & HARTFORD.—This company has applied to the Interstate Commerce Commission for authority for the execution of its promissory notes to an amount not exceeding $2,000,000 for six months, with privilege of renewal at 7 per cent, to cover a loan to the applicant of $2,000,000 in order to provide funds in part payment for 30 freight and 10 switching locomotives, 8 multiple-unit cars and 14 trailers, the balance of the cost to be supplied, if the commission shall so certify, by a loan from the revolving fund. The company also desires authority for an issue of $2,800,000 equipment trust notes, of which $2,000,000 are to be pledged with bankers as collateral security for the $2,000,000 of notes. The equipment trust notes will be entitled to a first lien on the equipment and will bear interest at 7 per cent. The company also asks authority for the execution of its promissory demand note or notes to a total amount of not exceeding $8,130,000, to be issued in anticipation of an advance of a like amount from the revolving fund and secured by a certificate from the United States government covering that amount. The $2,000,000 of promissory notes are to be given to five Boston banks. No arrangement has yet been made in connection with the $8,000,000 issue.

A special meeting of the stockholders will be held at New Haven, October 11, to act on proposed issue of indebtedness for funding or refunding indebtedness, providing funds for additions, etc., act on proposed issue of notes, debentures certificates or other indebtedness for acquiring new equipment by means of equipment trust or otherwise, and on proposition to amend vote at annual meeting by extending term of loan to be obtained from United States under Section 210 of Transportation Act from 5 not to exceeding 15 years. Stockholders of record September 30 will be entitled to vote.

PARIS & MT. PLEASANT.—The receiver has been authorized by the Interstate Commerce Commission to issue $100,000 of receivers' certificates for one year at 8 per cent, for the purpose of making necessary repairs to the roadway, station buildings and equipment.

SEABOARD AIR LINE.—The Interstate Commerce Commission has granted the authority asked by this company to issue a series of three-year, 7 per cent, extended, secured gold notes in an amount not to exceed $1,000,000, for the purpose of extending or paying $1,000,000 of the applicant's two-year, 6 per cent, secured gold notes which were outstanding in the amount of $4,000,000 maturing September 15, and to deposit and pledge with the Guaranty Trust Company of New York first and consolidated mortgage gold bonds, due 1945, as security for the proposed issue of three-year extended notes. The company is also authorized to issue $1,184,000 of first and consolidated mortgage gold bonds, to be pledged with the Secretary of the Treasury as part of the security for a loan of $6,073,400 from the United States, or as part of the security for the three-year gold notes; to pledge with the Secretary of the Treasury as part of the security for the loan, from among any nominally issued first and consolidated mortgage gold bonds, due in 1945, not exceeding $7,771,000, together with certain nominally issued preferred and common stock and certain stock of the Fruit Growers' Express Company; to renew, in whole or in part, 90-day notes dated May 20, 1920, pledging as security for the renewal notes a part or all of the collateral securing the existing notes, which are as follows: Note to Guaranty Trust Company for $500,000; note to National City Bank for $500,000; and note to the Chase National Bank for $250,000; and to issue and pledge and repledge securities of the applicant for the purpose of securing present and future obligations.

VIRGINIA BLUE RIDGE.—This company has been authorized by the Interstate Commerce Commission to issue one promissory note for $8,500, payable to the Riggs National Bank, Washington, D. C., to be used for the purpose of paying or taking up a note for $8,500 which matured on September 15.

WISCONSIN & NORTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue $500,000 of six months' notes at 8 per cent, to be used in part in extending its line from Appleton, Wis., to West Neenah, Wis., 5½ miles, and to acquire additional equipment.

Railway Officers

Executive

H. L. Traber, traffic manager of the Kansas City, Oklahoma & Gulf, with headquarters at Muskogee, Okla., has been elected vice-president and general manager, with the same headquarters, succeeding H. C. Ferris, resigned.

Financial, Legal and Accounting

C. F. Krebs, general auditor of the Chicago Great Western, with headquarters at Chicago, has been appointed controller, with the same headquarters, effective September 15. The office of general auditor has been abolished.

J. E. Murphy, statistician of the New York, New Haven & Hartford, has been given charge of the general books and accounts of that road, the Central New England and the New England Steamship Company, effective September 20, the position of general accountant having been abolished; effective the same date, **F. H. Palmer,** auditor of miscellaneous accounts, with headquarters at New Haven, Conn., assumed charge of all traffic accounts of the same roads. **C. H. Nero,** auditor of passenger receipts, with headquarters at New Haven, has been appointed auditor of freight accounts, with the same headquarters, succeeding **C. E. Hendrickson,** assigned to special duties, and **A. R. Down** has been appointed auditor of passenger receipts to succeed Mr. Nero, effective September 20.

Operating

J. E. Roberts, superintendent car service of the Delaware & Hudson, with headquarters at Albany, N. Y., has been appointed superintendent of transportation, with the same headquarters, effective September 1.

W. A. Kirkpatrick, trainmaster on the Canadian National, with headquarters at Neepawa, Man., has been promoted to superintendent of transportation, with headquarters at Saskatoon, Sask., effective September 1.

E. A. Sollitt has resumed his duties as superintendent of the Peru division of the Wabash, with headquarters at Peru, Ind., succeeding C. B. Davidson, acting superintendent, assigned to other duties, effective September 15.

C. H. Brown, assistant superintendent on the Grand Trunk Pacific, with headquarters at Edmonton, Alta., has been appointed superintendent of transportation of the western lines of the Canadian National, with the same headquarters, effective September 1.

T. P. White, superintendent of car service of the Grand Trunk Pacific, with headquarters at Winnipeg, Man., has been appointed superintendent of transportation of the Western lines of the Canadian National, with the same headquarters, effective September 1.

J. V. Nevins has been appointed chief despatcher on the Oregon Short Line, with headquarters at Pocatello, Idaho, with jurisidiction over the first, second and third subdivisions, main line and branches, effective September 9, succeeding **R. E. Brooks,** who has been promoted.

F. A. Winterson, assistant superintendent of the Quebec district of the Canadian Pacific, with headquarters at Montreal, Que., has been transferred to the Farnham division, with headquarters at Farnham, Que., effective September 13, succeeding **H. J. Main,** appointed car service agent, effective September 1.

O. C. Castle, assistant superintendent of transportation of the Texas lines of the Southern Pacific, with headquarters at Houston, Tex., has been appointed superintendent of

transportation, with the same headquarters, effective September 1, succeeding **F. M. Lucore,** resigned. **R. R. Unzicker** succeeds Mr. Castle.

L. F. Muncey, assistant superintendent on the Canadian National, with headquarters at Vancouver, B. C., has been promoted to superintendent, with headquarters at Kamloops Junction, B. C., having jurisdiction over the lines from Red Pass Junction to Vancouver, effective September 1. Mr. Muncey succeeds J. E. Nelson, who has been transferred.

Officers of the Canadian National, with headquarters at Winnipeg, Man., have been given jurisdiction over the lines of the Grand Trunk Pacific in addition to their former duties, effective August 24, as follows: **A. A. Tisdale,** assistant to the general manager; **E. Crawford**, superintendent car service; **W. Pratt,** superintendent sleeping cars, dining cars and hotels.

W. C. Steffa, superintendent of car service of the Chicago & Alton, with headquarters at Chicago, has resigned, effective September 15, to become superintendent of transportation of the Sinclair Oil Company at Chicago. The office of superintendent of car service has been abolished and Mr. Steffa's duties have been taken over by **C. W. Bearden,** superintendent of transportation, with headquarters at Chicago.

N. B. Walton, superintendent of the Grand Trunk Pacific, with headquarters at Edmonton, Alta., has been promoted to assistant general superintendent of the Canadian National, with headquarters at Prince Rupert, B. C., and with jurisdiction over the Grand Trunk Pacific lines from Edmonton to Prince Rupert, effective September 1. The positions of general superintendent and assistant general superintendent at Vancouver, B. C., have been abolished.

C. E. Maxfield, trainmaster of the New York, Chicago & St. Louis at Cleveland, Ohio, has been appointed assistant superintendent, with the same headquarters; **J. M. Crouch**, assistant trainmaster at Bellevue, Ohio, has been appointed to succeed Mr. Maxfield and **A. T. Hixon** has been appointed assistant trainmaster at Bellevue, succeeding Mr. Crouch, effective September 10. **M. J. Nolan** has been appointed terminal trainmaster of the Buffalo terminal territory, with headquarters at Buffalo, N. Y., effective September 16.

Coincident with the consolidation of the Canadian National and Grand Trunk Pacific, extensions and rearrangements of territory have been made, effective September 1, as follows: **W. A. Brown**, general superintendent of the Canadian National, with headquarters at Edmonton, Alta., has been given jurisdiction over territory extended to include the following Grand Trunk Pacific lines: Edmonton to Biggar, Tofield to Calgary, Biggar to Loverna, Oban to Battleford, Battleford to Carruthers. **A. Wilcox,** general superintendent of the Canadian National, with headquarters at Winnipeg, Man., has been given jurisdiction over territory extended to include the following Grand Trunk Pacific lines: Watrous to Winnipeg (including Watrous), Melville to Canora. **B. T. Chappell,** general superintendent on the Canadian National, with headquarters at Saskatoon, Sask., has been given jurisdiction over territory extended to include the following Grand Trunk Pacific lines: Biggar to Watrous, Young to Prince Albert, Melville to Regina, Regina to Riverhurst, Regina to Northgate, Talmadge to Weyburn. **W. I. Munro,** superintendent of the Canadian National, with headquarters at Saskatoon, Sask., has been given jurisdiction over the following lines: Saskatoon to Prince Albert, Prince Albert to Big River, Shellbrook to Denholm, Humbolt to North Battleford (including Humbolt), Saskatoon to Kindersley, Delisle to Lucky Lake, Elrose Junction to Eaton, Dalmeny to Carlton, Watrous to Biggar, Young to Prince Albert (including Prince Albert).

Coincident with the consolidation of the Canadian National and Grand Trunk Pacific lines, appointments and territorial rearrangements have been made as follows, effective September 1: **J. Irwin,** superintendent of the Canadian National, with headquarters at Edmonton, Alta., will retain his present headquarters temporarily, and will have jurisdiction over the lines from Edmonton to Biggar, Tofield to Calgary, Biggar to Loverna, Oban to Battleford, and Battleford to Carruthers; **M. D. Thompson,** assistant superintendent on the Grand Trunk Pacific, with headquarters at Regina, Sask., has been appointed superintendent of the consolidated lines, with the same headquarters, with jurisdiction over the lines from Regina to Saskatoon, Moose Jaw to Moose Jaw Junction, Avonlea to Gravelbourg, Regina to North Gate, Talmadge to Weyburn, Regina to Riverhurst and Regina to Melville; **G. A. Cuncliffe,** superintendent of the Canadian National, with headquarters at Brandon, Man., has been given jurisdiction over the lines from Brandon to Regina, Maryfield to Radville, Luxton to Estevan, Radville to Bengough, Virden to Belmont and M. & B. Junction to Hartney Junction; **M. B. Murphy,** superintendent of the Winnipeg terminal division of the Canadian National, has been given jurisdiction over territory from Carman Junction and west of the east yard limit at Transcona and Paddington; from Mileage 4.1 on the Emerson subdivision to the north yard limits at Westside on the Oak Point subdivision; Beach Junction and south on the Victoria Beach subdivision; east of St. James on the Grand Trunk Pacific; and all intermediate and diverging tracks between the limits above specified.

Traffic

T. C. Frew has been appointed general freight and passenger agent of the Newaukum Valley, with headquarters at Onalaska, Wash.

C. B. Sexton, general agent of the Northern Pacific, with headquarters at Chicago, has been transferred to New York in the same position.

E. E. Harold has been appointed general agent in the freight department, of the Chicago Great Western, with headquarters at Seattle, Wash., effective September 1.

W. M. Hough, whose appointment as general freight agent of the Mississippi-Warrior Service, with headquarters at New Orleans, La., was announced in the *Railway Age* of September 3 (page 426), was born at Kansas City, Mo., on November 5, 1887. He entered railway service as a station baggage agent for the St. Louis-San Francisco at Carthage, Mo., but was soon transferred to the commercial office of these lines at Dallas, Tex., where he served as a stenographer. In 1907 he entered the general freight office of the Frisco South Texas-Louisiana line, now the Gulf Coast lines, and during the next eleven years he served successively on that road as rate clerk, division clerk, chief rate clerk, chief clerk and assistant general freight agent. In 1918 he resigned to become chief clerk in the general traffic department of the Inland Waterway Service, with headquarters at New Orleans, La. He was promoted to chief of the tariff bureau in 1919 and in that position had charge of the promulgation of the waterways joint rail and river rate.

W. M. Hough

C. L. Senter has been appointed traffic manager of the Georgia, Florida & Alabama, with headquarters at Bainbridge, Ga., effective August 1, succeeding **C. J. Acosta,** appointed traffic manager of the Macon, Dublin & Savannah, effective same date.

R. C. Dearborn has been appointed traffic manager of the **Pacific Fruit Express, with headquarters at Chicago, effective**

September 1, succeeding **E. S. Briggs,** who has been appointed chairman of the National Perishable Freight Committee; **E. S. Norris** has been appointed assistant traffic manager, with headquarters at San Francisco.

J. R. Scott has been appointed assistant general freight agent of the Canadian National, the Grand Trunk Pacific and the Grand Trunk Pacific Coast Steamship Company, with headquarters at Vancouver, B. C.; **G. A. McNicholl**, assistant general freight and passenger agent of the Grand Trunk Pacific, with headquarters at Prince Rupert, B. C., has been appointed assistant general freight agent of the three companies, with the same headquarters. Other appointments are as follows: **W. A. Whyte,** division freight agent in charge of rail traffic, and **Albert Davidson**, division freight agent in charge of Grand Trunk Pacific Coast Steamship traffic, with headquarters at Vancouver, B. C.; **H. A. Stuart,** division freight agent, with headquarters at Victoria, B. C.; **F. L. Norman,** commercial agent, with headquarters at Seattle, Wash. All appointments effective September 10.

W. D. McVey, whose promotion to assistant general freight agent of the Michigan Central, with headquarters at Buffalo, N. Y., was announced in the *Railway Age* of September 3 (page 426), was born on October 23, 1881, at Perth, Ont. He entered railroad service in 1898 as a messenger boy in the telegraph office of the Michigan Central at Detroit, Mich. After serving in various clerical positions in the office of the general freight traffic manager of the Michigan Central, he was transferred to Bay City, Mich., in October, 1904, as rate clerk in the office of the assistant general freight agent. In May, 1907, he was appointed commercial agent at Bay City, which position he held until February, 1909, when he left to become chief clerk to the general freight traffic manager of the New York Central, with headquarters at Chicago. After a year with the New York Central, Mr. McVey was appointed commercial agent of the Ontario Central Despatch, at Toledo, Ohio. In April 1917, he returned to the Michigan Central as commercial agent, retaining his headquarters in Toledo. At the time of his recent promotion to assistant general freight agent Mr. McVey was general agent of that road at Toledo.

Mechanical

E. Hacking, master car builder of the Grand Trunk Pacific, with headquarters at Transcona, Man., has been promoted to assistant master car builder on the Canadian National, with headquarters at Winnipeg, Man., effective September 1.

C. L. Emerson, division master mechanic of the Chicago, Milwaukee & St. Paul, with headquarters at Perry, Iowa, has been transferred to the Chicago terminal, with headquarters at Chicago, succeeding F. Hopper, who has resigned. **E. L. Notley** succeeds Mr. Emerson.

Andrew McCowan, master car builder of the Canadian National, with headquarters at Winnipeg, Man., and **S. J. Lupton,** chief boiler inspector, with the same headquarters, have had their jurisdiction extended to the lines of the Grand Trunk Pacific, effective September 1.

A. H. Eager, mechanical superintendent of the Canadian National, with headquarters at Winnipeg, Man., has been given jurisdiction over the lines of the Grand Trunk Pacific, in addition to his former duties, effective August 24. He will retain his former headquarters.

Laird W. Hendricks, superintendent of shops of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., has been appointed mechanical superintendent of the Bangor & Aroostook, with headquarters at Derby, Me., succeeding H. Shoemaker, resigned, effective September 17.

R. M. Brown has been appointed engineer of motive power of the New York Central, and **F. S. Gallagher** engineer of rolling stock, with headquarters at New York, effective September 1. **G. E. Doke,** engineer of materials, with headquarters at Collinwood, Ohio, has been appointed engineer of tests, with headquarters at New York, effective same date. The position of engineer of motive power and equipment has been abolished.

R. D. Hawkins, equipment engineer of the Great Northern, with headquarters at St. Paul, Minn., has been appointed general superintendent motive power of the Atlantic Coast Line, with headquarters at Wilmington, N. C. **Willard Kells** will be superintendent motive power, with the same headquarters, effective September 15.

Engineering, Maintenance of Way and Signaling

H. A. Dixon, chief engineer of the Canadian National, has been given jurisdiction over the lines of the Grand Trunk Pacific, in addition to his former duties, effective August 24. He will retain his headquarters at Winnipeg, Man.

H. M. Lull, division engineer of the Southern Pacific, with headquarters at Portland, Ore., has been promoted to succeed **E. B. Cushing,** engineer maintenance of way, with headquarters at Houston, Tex., who has resigned, effective September 15, but Mr. Lull's title will be chief engineer instead of engineer maintenance of way, although his duties will be the same.

T. Turnbull, engineer maintenance of way of the Canadian National and the Grand Trunk Pacific, with headquarters at Winnipeg, Man., has been given jurisdiction over all Canadian National lines west of Armstrong, Ont., west of and including Port Arthur, Ont., to and including Edmonton, Alta.; the Stony Plains, St. Albert, Athabaska, and the Onoway subdivision and all Grand Trunk Pacific lines east of and including Edmonton, Alta., effective September 1.

Purchasing and Stores

W. C. Livingstone has been appointed division storekeeper of the Pittsburgh division of the Pennsylvania, with headquarters at Derry, Pa., effective September 1.

George W. Grossner has been appointed purchasing agent of the New Orleans Great Northern, with headquarters at New Orleans, La., succeeding William Grentzenberg, resigned, effective September 16.

A. E. Cox, general storekeeper of the Canadian National, and **F. W. Tisdale,** general purchasing agent, have been given jurisdiction over the lines of the Grand Trunk Pacific, in addition to their former duties, with headquarters at Winnipeg, Man., effective August 24.

Railroad Administration

E. M. Alvord, assistant to the director general of railroads, has been appointed director of the Division of Liquidation Claims of the Railroad Administration, with offices at Washington, D. C., succeeding Max Thelen, who has resigned to engage in the practice of law in California. Mr. Alvord will continue to act as assistant to the director general until his successor is appointed. Mr. Alvord has been engaged in railroad service for about 46 years. He entered railway service as telegraph operator for the Ohio & Mississippi and was for three years agent and operator, followed by three years during which he was engaged in the construction of railroads in Texas. He has had a varied experience on many different roads, holding positions up to the rank of vice-president. He was the first official appointed on the Fort Worth & Denver and was later connected with the International & Great Northern, Sherman, Shreveport & Southern, Missouri, Kansas & Texas, Midland Valley and Pittsburgh & West Virginia, of which he was general superintendent. He entered the service of the Railroad Administration in April, 1918, as special representative of the Division of Operation. He was later a member of the compensation committee and of the committee on claims and on May 18, this year, was appointed assistant to the director general. **Max Thelen** was formerly president of the California Railroad Commission. He became connected with the Railroad Administration as director of the Division of Public Service and after the termination of federal control he was appointed director of the Division of Liquidation Claims. He was given a farewell luncheon by officers and employees of the division at Washington on September 21 and members of his department presented him with a chest of silver.